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ABSTRACT

Based on telephone interviews with 12 Association of Research Libraries (ARL) member libraries, this report presents the underlying reasons for the libraries' decisions relating to the design and implementation of automated library systems. The survey results are summarized, a list of respondents is provided, and profiles of present and planned systems are presented. A copy of the telephone questionnaire is also included. Primary-source documents pertaining to the planning process, implementation, and operation of automated library systems are presented as follows: (1) Planning Process--"Charge to Automation Committee" (University of Houston), "Candidate Systems" (University of Michigan), "NOTIS at Rice University" (Rice University), "Committee Appointment Letters" (Ohio State University), "Report of the Ad Hoc Committee on Future Information Services" (Texas A&M University), and "Formal Evaluation of Vendor Proposals" (Vanderbilt University); (2) Implementation--"Implementation and Operation of Linked/Interfaced Systems at the Library of the University of Illinois at Urbana-Champaign" (University of Illinois); "Operating Environment, Development Activities, 5-Year Projection" (University of North Carolina); and "Implementation Plan" (University of Michigan); and (3) Operation--"Proposed Service Agreement between the University Library System and the Computing Center" (University of Michigan), "Agreement Relative to Responsibilities to IBM" (Vanderbilt University), "New York University Libraries GEAC Online Catalog" (New York University), and "Use Statistics Survey" (Vanderbilt University). (KM)

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AUTOMATED LIBRARY SYSTEMS IN ARL LIBRARIES

The development and implementation of more fully integrated or interfaced automated systems involve a series of administrative and technical issues that ultimately affect all levels of academic library staff. In addition, the environment of automation enhancements is changing rapidly, demanding increased ability on the part of the library to keep up with technological advances, to remain flexible as decisions are made, and to reorganize as responsibilities shift.

The chief purpose of the research leading to this SPEC Kit was to discover underlying reasons for decisions as automated systems are more fully integrated in Association of Research Libraries (ARL) libraries. Scheduled telephone interviews of about two hours duration were conducted with representatives of 12 member libraries during Spring 1986. Questions covered three broad areas: pre-purchase or design decisions, responsibilities for system implementation and operation, and expectations for the future. The libraries included in the survey were selected to represent different approaches to integrated automation, namely locally designed systems, vendor delivered systems, software-based systems, and systems that mixed more than one of these strategies. The first document in the Kit provides a complete report on survey results.

PRE-PURCHASE AND DESIGN DECISIONS. Methodologies that libraries used to select and design automated systems were reflective of their general decision-making process. In many instances, the decision-making was kept at an administrative level, with final choices made by the director, or the director in consultation with senior level administrators. Libraries often used committees, and in a variety of ways—ranging from general automation committees overseeing all functions, to ad hoc committees writing specifications for specific modules.

Systems department or officer responsibilities included serving as primary authors of locally designed systems or Requests For Proposals (RFP), or as consultants to committees. Where there was local development, the systems office generally was at the center of nearly all activities, with extensive interaction with operational units. (A SPEC Kit detailing systems organizations in ARL libraries is scheduled for publication later this year.)

Although most of those surveyed had not employed consultants, their assistance was useful in some areas. Consultants provided general and detailed specifications for purchase or design, validated the work of other consultants, evaluated concepts that had been developed, and provided broad systems architectures.

Major technical decisions faced by the libraries involved purchase vs. design of a system, integrated vs. interfaced architecture, and whether to base the system on minicomputers or mainframes. In each of these areas, the reasons for decisions have changed over the past three years because of developments in library systems and library staff expertise. In all cases of locally designed systems, automation efforts were already well underway by the end of the 1970s. Integrated systems (the development of a system by a library or vendor as a single product) and interfaced systems (the local mixing of systems from a variety of sources) have both increased in use substantially since a 1983 SPEC Kit addressing this same subject. Although the 1986 phone survey discovered a few cases of purely integrated and purely interfaced systems, there usually was substantial crossover.

There was a fairly even division between libraries using mainframes and minicomputers. When mainframes were involved, it was common to have the computer located outside the library, such as in the university computation

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center. Typically, libraries chose minicomputers to keep the staff time devoted to machine maintenance to a minimum, and to allow the library to maintain control over the system. The key issue in all of these decisions, however, was not based on a superior architecture. In most cases, the architecture was decided based on the desired functionality or the available resources, rather than the architecture being a goal unto itself.

OPERATIONAL RESPONSIBILITIES. Library operations were typically the purview of the managers of individual areas, rather than of committees. Nonetheless, some libraries accomplished many changes through committees, and in situations where operations were given a large degree of autonomy, committees were considered vital to the success of the enterprise. The role of systems departments often was to provide project management and technical support, including coordinating the hardware and software, running jobs, and coordinating a maintenance contract. Training and documentation was a part of both the systems department and the operational departments. The systems departments provided initial training and documentation on how systems worked, while the operational departments were responsible for writing procedures and training manuals to integrate the system into the workflow of the department.

ORGANIZATIONAL CHANGES RELATED TO SYSTEM IMPLEMENTATION. Probably the most significant and widespread changes resulting from automation were in the reorganization of libraries to accommodate the new systems. Many of the observations and predictions in *SPEC Kit #112 (Automation and Reorganization of Technical and Public Services*, March 1985) were being implemented. Libraries reported that organizational restructuring was prevalent, ranging from the creation of new divisions and departments to the establishment of new positions to coordinate automation activities. Many respondents noted that automation had caused a further decentralization of operations because information that previously was housed in one place (usually technical services) was now distributed to wherever terminals were located. This decentralization had brought a vast increase in the involvement of public services librarians in the automation efforts of the library. Some libraries had distributed cataloging or serials check-in to departmental libraries.

NEEDS AND TRENDS. According to the 12 librarians interviewed, areas in need of improvement reflect both public and technical services concerns: the need for additional CPU power; improved design terminals and workstations; the availability of user cordial boolean operators and keyword searching; better management statistics and information; refinements to the public access catalog screen displays; widespread availability of non-Roman alphabet items in the database; improved methods of using Library of Congress authority tapes to update local authority files; retrospective conversion for specific collections or for the entire collection; the inclusion of periodical index access through the same terminal as the online catalog; and improved vendor services.

The next generation of systems was expected to bring a host of changes, many of which were already under development. These changes included: expanded databases, including the information now available from online databases and full text retrieval; more links with other computing systems on campus through a common interface and local area networks; user-based design; simplified software; greater use of artificial intelligence to create expert systems to assist users; and more sophisticated workstations that will incorporate audio, video, and data communications for scholars.

This kit serves to update *SPEC Kit #90, Integrated Library Information Systems*, published in January 1983. (Kit #90, which remains available as a back issue, includes results of a SPEC survey of 31 ARL libraries, planning documents, general system descriptions and reviews, and examples of specifications.)

SPEC Kit #126, Automated Library Systems in ARL Libraries (July-August 1986, 111 pages), contains SPEC survey results, six documents describing the planning process, three documents describing implementation of systems, and four documents dealing with operational issues—two on computer center relationships, one example of use statistics, and one general system description.

* * * *

This flyer/kit was prepared by Arnold Hirshon,
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USES OF SPEC KITS

The Systems and Procedures Exchange Center (SPEC) is a clearinghouse operated by the Association of Research Libraries. Office of Management Studies that provides a central source of timely information and materials on the management and operations of large academic and research libraries. It facilitates the exchange of knowledge and documents through SPEC Kits, which are distributed ten times each year to ARL members and other interested libraries. The Kits include topically-arranged groupings of unedited primary source documents – selected for their value to administrators and decision-makers – that illustrate a wide range of alternative approaches to specfic issues.

Kit documents come from general membership surveys and from selected libraries contacted directly by SPEC, and most Kits are produced within six months of surveys. The documents' value comes from their variety of ideas, methods, and solutions. They are not viewed as finished products, but rather as points of departure for a library's planning efforts and as stimulants to innovative approaches to problem-solving. As such, Kits do not present answers or prescriptions for any one library; instead they illustrate how selected ARL members are planning for or dealing with particular issues. The worth of any one Kit to a particular library will depend upon the specific topic covered and the library's stage of development in that area.

Materials are selected according to the following criteria:

- Presents an approach of potential value to administrators and decision-makers
- Timely, and dealing directly with the topic under consideration
- Probability of application of ideas or thinking to other library situations
- Illustrative of actual practice, rather than theoretical
- Understandable, readable communication

All together, the materials should provide a range of alternative approaches that complement each other, provide variety, and stimulate comparison and contrast.

Libraries can take advantage of the Kit compilations in a number of ways. Administrators can evaluate the assumptions, methods, and results of other libraries' approaches; compare and contrast them; and use the learnings in their own situations. Library staff members can use the kits as professional development and current awareness tools. Committees and task forces can use them to begin a review of current practices. And the Kits can identify other persons or places to contact for further information. Back-up files in the SPEC office also are available for loan to member libraries. In addition, SPEC will conduct on-demand surveys or analyses geared specifically for a single library.

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AUTOMATED LIBRARY SYSTEMS IN ARL LIBRARIES

From RFP To Reality: A Report of Survey Results of Twelve ARL Libraries

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The development and implementation of automated library systems in ARL libraries involve some of the most challenging administrative and technical issues that libraries must address today. The decisions reached, and the methodologies employed to reach those decisions, have wide-ranging implications that involve all levels of library staff. The environment has changed so rapidly that information published only three years ago is already very out-of-date. (See also: Integrated Library Information Systems in ARL Libraries. Washington, D.C.: Association of Research Libraries, Office of Management Studies Systems and Procedures and Exchange Center, 1983. SPEC Kit no. 90.)

This SPEC Kit is different from most other Kits in its approach. The chief interest here primarily was not to represent simply what the ARL members as a whole or individually were doing with automated library systems, but more importantly, the underlying reasons for the decisions. Telephone interviews were conducted with twelve ARL member libraries during the spring of 1986. The libraries chosen for the survey and in the documents are national leaders in automation and represent different approaches to integrated automation: locally designed systems, vendor delivered systems, software-based systems (such as NOTIS), and systems that mixed more than one of these strategies.

Through some survey questions, we sought to discover trends; through others, provocative ideas. From the information presented, it is hoped that a library embarking upon a decision will understand why a library chose the course of action, and to judge whether those reasons are applicable to the local situation. In most instances throughout the Kit, you will not find the typical statistical results as to how many libraries are following a particular practice. In this way, the generalizations to be drawn from the information presented will come from the reader.

1. PRE-PURCHASE/DESIGN DECISIONS

This section reports the experiences of the libraries concerning the methodology used to decide whether to purchase or design, and to introduce, the system.

1.1. Decision Methodology and Assignment of Responsibilities

The methodology to decide on an automated system was reflective of the general decisionmaking process. In many instances, the decision was reached by upper level administrators, such as the chief administrative officer of the library (director), or the director in consultation with other senior level administrators. In some cases this extended as far as a single administrator determining, in large measure, the character of the system.

Although middle management (such as department heads) and other staff were included at the design or implementation stages (when their areas of operation were affected), they had much less involvement in the choice of the systems architecture to be employed.

Committees were used repeatedly, and in a variety of ways. Most often, different types of committees were employed at different stages. Some libraries had general automation committees to oversee all functions. In other cases there were separate committees, for example, to write specifications for a particular module, or to implement a function. Committee documents were circulated widely throughout the library for comment. Regardless of the library, whenever committees were used, the ultimate decision rested with the chief administrative officer of the library.

Libraries that decided to purchase systems generally prepared detailed requests for proposals (RFP's). In one case, however, the library administration knew it wanted an existing system, and therefore chose to look at available systems only rather than writing an RFP. After reviewing the available systems, most of the systems were unacceptable. Following this review, staff were recruited based on their expertise (not democratically), to evaluate the remaining systems. The systems in the final pool were made available in the library for extended demonstrations.

State universities found the state bureacracy was a partner in the process. In one instance, a bid was issued, but it had to be resubmitted several times because it was the first time an automated library system contract was let out in the state, and contracts were being watched carefully. The state required to library to drop some specifications on the grounds that the bid should be based on functions the vendor had available, not upon what the library desired nor upon what the vendor promised but had not yet delivered. The SPEC Kit respondent for this library reported that the resulting contract was weak, but strong enough to deal with the vendor when necessary.

A special role was often given to a systems department or officer. For example, in the development of a request for proposal, the systems department responsibilities in different libraries included: being the primary author of the RFP; being a consultant to operational departments or committees; preparing an impact statement. For libraries that undertook local development, the systems department generally was at the center of nearly all the development, and had extensive interaction with the operational units.

At three libraries with local development, the initiative came from faculty or administrators within the university. At one library, a professor who found the library public access system too difficult to use developed his own prototype of user interface. He was later contracted by the library to build and maintain the interface; this individual was also completing a reserve system to interface with the online catalog. At another library, the developer was a faculty member in electrical engineering department.

1.1.1. Consultants

Most of the libraries surveyed did not employ consultants, which might have been attributable to the size and breadth of knowledge available at ARL libraries. Three libraries used consultants, two of which chose to purchase vendor systems, while the third library developed the system locally.

In the two situations where the vendor systems were selected, one library used consultants to provide both general and detailed specifications on how to proceed; a second team of consultants was used to validate the work of the first team. The other library used a consultant to review specifications the library had already prepared.

The one library that chose local implementation employed consultants to a evaluate a concept that the library had already developed. The consultants primarily spoke with administrators, middle managers, library committees and university data processing personnel. The consultants were also asked to provide a broad systems architecture to implement the concept. After the system implementation was underway, this library used another consultant to review a specific implementation plan for a new module of the system. The consultant was used in this case because the librar was tending toward a particular solution and wanted confirmation nothing had been overlooked.

One respondent from a library that did not use a consultant reported the library administration had initially negotiated with some consultants, but chose not to sign contracts because the administration believed there was nothing to be gained.

1.1.2. Reasons for Purchasing or Designing

1.1.2.1. Purchased Systems

The reasons why libraries chose to purchase rather than develop their own systems were: the cost of purchase was less than the cost of development; the expected complexity of locally designing a system; the staffing resources required for local development; and, there were acceptable library automation systems already available in the marketplace.

1.1.2.2. Designed Systems

Libraries that have designed systems largely fell into two categories, with some variations. In some libraries, the systems were designed early (during the 1960's and 1970's), but later abandoned in favor of new technologies available from vendors or software-based systems. In other libraries, there was continual upgrading of the local systems to the state of the art. In all cases where local design was employed, local automation efforts were well underway by the end of the 1970s.

Libraries chose to design their own systems because no acceptable alternatives were available in the marketplace at the time local development work began. There were also local reasons for the decision; for example, one library was in the process of a major development effort for a new building, and capital was available for systems planning.

A variation on inhouse design was local design of some functions, with interfacing of existing external modules for other functions. Interfacing involved either minimal or extensive rewriting of the external programs. The decision whether to do all local programming, or to interface an external module for a specific function, generally revolved around the fiscal implications, and the availability of a module that could do the job and could be interfaced easily.

1.1.2.3. Change from Designed to Purchased

Some libraries changed (or were changing) to a second or even third system. These libraries had their previous experiences to call upon. Change was sometimes required when transaction loads grew and existing systems could not meet the needs. In other cases, the library wished to change its automation strategy in some way (such as to abandon a standalone function and to look for an integrated system).

One library previously engaged in local development changed to a purchased system because of: the library's involvement in collaborative endeavors (including membership in the Research Libraries Group); the ability of the library to manage an externally provided system; and the high cost of maintaining a systems staff.

1.2. Systems Architecture

The respondents were asked state why the library choose the system architecture that it did. In particular, why did libraries chose integrated versus interfaced systems, and mainframe-based versus minicomputer-based systems?

As defined for this survey, integrated systems were purchased from one vendor, or designed locally in toto, with all of the functions intended to work together as a single system. Interfaced systems were brought together by the library through a combination of various modules produced by more than one vendor or library.

Although the survey discovered a few cases of purely integrated and purely interfaced systems, there was substantial crossover. The crossover began when a library took existing functions from its locally produced system (such as a module for a public access catalog or circulation) and added a module (such as acquisitions or serials control) from another system.

There was a fairly even division between libraries surveyed that were using mainframes and minicomputers. The definitions of "mainframe" and "minicomputers" have been complicated by the technology. Minicomputers traditionally were distinguished from mainframes by the amount and type of processing power, and the number of peripheral devices (such as terminals) that the central processing unit (CPU) could handle. The advent of "superminicomputers" has blurred (but not eliminated) the distinction. In this survey, the superminicomputers were included in the minicomputer category.

The key issue, however, was not that one architecture was superior. For example, one respondent noted that the library preferred to integrate, but found it had to interface because of local considerations. In most cases, the architecture was decided as a result of the functionality desired or the resources available, rather than the architecture being a goal unto itself.

1.2.2. Integrated Systems

The respondents who advocated integrated systems did so because of the system's processing efficiency and effectiveness across all of the functions. Integrated systems also eliminated hardware and data redundancy (and maintenance of both), and therefore were less costly to run. Through integration of data, the information needs of staff and library users could be met at one place.

Some libraries used integrated systems as long as the system provided what was needed. If, however, a needed function was unavailable, or if the module provided was functionally inadequate, libraries indicated a willingness to consider standalone or interfaced modules.

Another library started with local development of an public catalog. When no acceptable module for circulation was commercially available to interface with the public catalog, the library administration decided to continue local development of the circulation model.

Although interfacing might be more possible now than when local library systems were first being developed, integrated systems adherents believed interfacing still presented many problems. Those who choose the integration route were skeptical that interfaced systems could be made to work with little maintenance over a long time. Some respondents who chose integrated systems mentioned problems observed in libraries that attempted to interface, but could not make the various system pieces work in harmony. One respondent noted it was difficult enough to interface the bibliographic utility with local systems without having to interface numerous other subsystems.

A particular pitfall mentioned in interfacing was the "finger pointing" it caused. Library staff had to be involved in coordinating hardware and software maintenance to avoid having the various parties involved pass off a problem as having been caused by someone else. Libraries that opted for integration believed this was one way to minimize (if not completely obviate) the finger pointing.

1.2.3. Interfaced Systems

Only three institutions surveyed had a strategy of interfacing. Interfacing resulted because there were no commercially available integrated systems when the library began to mount its system. Interfacing also allowed the libraries to finance incremental system growth, purchasing each module as it was needed, rather than buying the system all at one time.

External concerns were also a factor. One state university library was required to interface with the public access catalog system used by the state system. The state, however, did not intend to provide functions other than the public catalog, so each library in the state system had to separately develop the other functions on its own.

One respondent from a library that began with a locally developed integrated system, but later interfaced functions, noted the library adopted a philosophy to integrate functions needed at all terminals (such as bibliographic and holdings data, and on order information), but not information of a specialized nature (such as the fiscal data).

1.2.4. Mainframe-Based

Users said they chose mainframe computers because there were no minicomputers of sufficient size to meet their system requirements. Libraries using mainframe computers generally required the system to handle 200-400 terminals; one respondent represented a library with a load of only 150 terminals.

The responsibility for the daily management of the hardware sometimes falls outside the library. Although outside hardware management is not limited to mainframe environments, it was more common to have the computer outside the library (such as in the university computation center) when a mainframe was involved than a minicomputer. Outside management was a benefit because the library could call employ the expertise of the computation center, and library staff did not need to tend to the machinery at all hours.

It is also possible to have a mixture of hardware. One respondent noted the library was using microcomputers for its public access terminals. The microcomputer was used to translate command syntaxes, and worked as a system interface to prevent the response time degredation that would occur if the load were placed onto the mainframe. The microcomputer was also effective because changes to the interfaces were made more quickly and easily.

Other respondents reported using a combination of mainframes and minicomputers. In one case, the mainframe, which was shared by the library and other university departments, housed the main database. The mainframe generated multiple copies of the database for the public catalog, which was mounted on multiple minicomputers. Backup was therefore provided through redundant databases; such redundancy would not have been possible if all of the functions were run off the mainframe. In this configuration, each type of hardware was used for the purpose for which it was designed; the mainframe was used for batch processing, and the minicomputer was used for intensive online realtime transactions.

1.2.4. Minicomputer-Based

Typically, minicomputers were chosen to minimize the amount of staff time spent on machine maintenance. Minicomputer users believed their systems were as powerful, or almost as powerful, as the mainframes.

Another reason a minicomputer was chosen was to keep control of the system within the library. One reporting library chose a minicomputer because the university computation center services were too unreliable when the system was first selected. This library was beginning to consider a replacement system and said neither minicomputers nor mainframes were being ruled out this time because the university computing environment had changed for the better. If anything, the library was now wary of choosing a minicomputer because it might be too small to meet the demands to be placed onto the system.

2. SYSTEM IMPLEMENTATION AND OPERATION

Once the system had been selected, the responsibilities for implementing the system were vested in different places within the library. Respondents were asked to address which types of responsibilities were given to committees, operational departments (such as the circulation or cataloging department), and the systems department, and why this structure was derived.

2.1. Areas of Responsibility

2.1.1. Use of Committees

All the libraries reporting used committees in some capacity, but there were widely divergent models how, when and why committees were employed. Committees were used to coordinate suggestions for changes to the system, for recommending courses of action, and for placing the needs into a priority order. Respondents gave the following reasons for using committees:

- the lack of sufficient systems staff to do all necessary work;
- the need to collect information from disparate sources on how the system should function;
- to build staff interest in the project and have staff become more heavily invested in the decisions reached;
- to counteract myopic views of operational departments, and to provide opportunities for operational departments to go beyond their existing base of knowledge by learning and trying new techniques;
- to act as a buffer for the systems department and prevent systems staff from being inundated by trivial requests.

On the negative side, respondents found committees time consuming, and committees sometimes encroached upon the managerial prerogatives of some of the operational departments. At an extreme, one respondent reported the library had a general management philosophy that things were more rapidly accomplished by an individual than by a committee.

Committees were often used in the planning process in the preparation of the RFP, in reviewing the responses, in the pre-implementation stages for development of new policies and procedures, in initial training, in developing brochures and manuals, and in coordinating publicity efforts. Libraries with locally designed systems generally relied heavily upon committees.

The membership on committees varied widely, from senior level management to line personnel. It also was not uncommon to have representation from outside the library to provide technical guidance, such as participation from the university computation center.

Committees were either established as standing committees or were disbanded shortly after the initial implementation had been completed. Libraries chose the latter strategy to return control quickly to the operational department responsible for the function.

The survey did not reveal a pattern of libraries having a central automation coordinating committee; these tasks seemed to be delegated to specialized committees and to the departments.

Ad hoc committees had broad areas of responsibilities, including the preparation of specifications. These committees were also responsible to make more limited recommendations, such as the placement of terminals, the preparation of needed documentation, and the coordination of training sessions.

2.1.2. Operational Department Responsibilities

Library operations were typically the purview of the managers of individual areas, rather than of committees. Although some libraries accomplished changes through committees, departments normally were given a wide latitute to manage their own operations. Although the library administration wanted middle managers involved, the middle managers themselves often saw this as an additional burden. Department heads, senior administrators, appropriate committees, or the systems department were responsible for resolving issues that crossed over areas of responsibility.

In operational areas, libraries tend to keep operational control within the traditional areas of service. For example, one library noted the associate university librarian for public services was responsible for convening the design group responsible for suggesting changes the public access catalog. In this way, changes emanate from within the departments, with an interactive process between the operational and systems departments.

There was a wide disparity in the involvement of senior level administrators in the design and running of the systems. While some respondents noted that many or all senior administrators were heavily involved in the system policy issues, in at least three libraries, associate directors/assistant university librarian level activity was largely limited to the "traditional" (non-system) concerns. The chief administrative officers as a group, however, exhibited a substantial degree of control over systems decisions.

2.1.3. Systems Department and Operational Department Relationships

The systems department provided project management and technical support, including coordinating the hardware and software, running jobs, etc. Software and hardware bugs were reported to the systems department by librarians using the various system modules. Maintenance contracts were coordinated by systems staff as well.

To make changes to the system, the most common path was to have line managers and department heads raise the issue with senior level administrators. The administrators brought these suggestion to the systems department through either the chief administrative officer or the administrative council of the library. As one respondent stated, "[the] systems [department] is the guarantor of the project, not the governor."

Respondents were asked to explain the distinction between the areas of responsibility between the systems department and the operational departments. In general, the operational departments were responsible for creating and maintaining data, and for direct patron interactions. The systems department was responsible for making the system run, for setting technical standards, and for providing information and support to the operational departments.

Training and documentation was an area where both the systems department and the operational departments tended to be involved. In at least two libraries, the systems department provided initial training and documentation on how the system worked, but the operational departments were responsible for writing procedures and training manuals to integrate the system into the workflow of the departments. After an initial group of staff had been trained, it was most common for the operational departments to be responsible for the ongoing training (to train new staff and update existing staff).

2.2. Changes Caused by System Implementation

The respondents, who came from diverse positions within their libraries, were asked to explain what major changes had occurred as a result of implementing the system. Both personal opinions as well as organizational positions were solicited, but were not isolated. Most of the changes reported by libraries affected the staff more than the patrons.

2.2.1. Organizational Changes

Probably the most significant and widespread change was reorganization to accommodate the new systems, including the creation and use of additional committees. At least two libraries reported nearly constant organizational restructuring. The nature of these organizational changes, however, was quite different. One library reorganized from the top down, creating new divisions and departments. In other libraries, new positions were identified and created to coordinate automation activities and were added within the existing structure.

Most libraries that previously did not have systems officers or departments created them. On the operational side, library positions were created to coordinate staff activities such as bibliographic maintenance, public catalog training, etc. Some of these positions were fulltime, others were a shared responsibility along with other duties. As these positions were created, it was common for them to report to the chief administrative officer of the library (at least for the automation aspects of the job).

Automation also had an effect on clerical and paraprofessional staff. Job descriptions and ranking structures underwent a review as the result of a general library, state, or university review of positions. The result often was new classification levels were created because of automation, with an increase in the number of paraprofessional levels.

2.2.2. Decentralization of Functions and Data

Many respondents noted automation already had caused a further decentralization of operations; information previously housed in one place (usually technical services) was now distributed to wherever a terminal was located. One respondent noted the library was trying to find ways to decentralize the work, but to centralize the decisions.

The justification for decentralization was to maximize limited staff resources; one library expected decentralization to reduce operating costs by $500,000 through the reduction of redundant efforts. With decentralization, however, was concern that quality standards would drop as less control could be exerted over the staff performing these functions. Greater coordination of efforts, and more training, were expected to be required in the future. One library created a specialized unit for data administration. The unit was empowered to enforce its policies through the suspension the privileges of units that did not obey the rules.

With the decentralization of databases and information there was an increased interdependence between the operational areas of the library. Some libraries created new committees, and in most cases, supervisors coordinated their efforts more. One library noted some staff have "talked to each other for the first time."

Traditional lines were broken. Public services librarians were more involved in library automation as a result of decentralization. One library disbanded and distributed its central cataloging unit, and now has the work performed in departmental libraries. Other libraries were in the midst of considering options, including the distribution of responsibilities for placement of orders and the check-in of serials. (See also: Automation and Reorganization of Technical and Public Services. Washington, D.C.: Association of Research Libraries, Office of Management Studies Systems and Procedures Exchange Center, 1985. SPEC Kit no. 112.)

The increased activity by public services librarians brought other changes as well, including greater concern about the content of the database. Public services staff had to answer more technical questions from patrons. The staff had to better understand matters that previously could have been ignored, such as the best way to construct search, or the significance of MARC tags. Increased expectations of public services librarians came with their increased profile in the areas of library automation.

Decentralization was not all positive. Territoriality remained an issue, albeit in a different form. For example, one library reported tension during the initial planning and implementation over relatively minor issues, such as who would be responsible for the care and feeding of public access catalog terminals and equipment. These problem were solved later, however, as new ideas were discussed for coping with the realities of the distributed access environment.

2.2.3. Changes to Policies and Procedures

Increased attention to the maintenance of the database, and diminished concentration on card files, was a policy change mentioned by a few respondents. Libraries had even considered elimination of some traditional library tools once considered inviolate, such as the shelflist. (See also: Catalog Maintenance Online in ARL Libraries. Washington, D.C.: Association of Research Libraries, Office of Management Studies Systems and Procedures Exchange Center, 1985. SPEC Kit no. 119.) Nonetheless, there seemed to be few changes to specific policies or procedures that arose from the implementation effort. One respondent expressed disappointment that fewer changes were made than necessary. Another noted some procedures changed, but policies had not. Concern was expressed that there was a lost opportunity to use automation as a catalyst for changes that would have resulted in better use of the systems.

2.2.4. Technological (Hardware/Software Related) Changes

The rapid growth of systems brought an unexpected demand by patrons for more services. For example, one librarian noted patrons were asking for dial-in access nearly as soon as public access catalog terminals were installed. Other services requested were direct access to texts through the terminal, printers attached to terminals, remote charging of volumes, access to location information, and charging of materials via telephone or the computer.

2.3. Automation Needs: Realities and the Ideal

The state of automation in the libraries surveyed varied widely. All of the libraries had automated at least one or two functions, but some had more modules available than others. The respondents were therefore asked to address two questions:

1. What function has the most and least pressing actual need for automation in your library at the present time, and why?
2. Given what you know about the needs of your library, if no functions were automated, how would you personally rank the ideal order in which the functions should be implemented?

2.3.1. Reality

The highest function ranked was the online public catalog. Some libraries included within this function the creation and maintenance of the database. The reasons for this high ranking included: the need for distributed access to information on a campus that was geographically dispersed; the high degree of interest in the catalog expressed throughout the university community; the format of the catalog (cards or microfiche) was hard to use and had met with resistance by the public; the high visibility the library received from catalog implementation; and the elimination of redundant technical services operations.

Serials control also ranked highly because it was becoming harder to maintain the large number of active titles in a manual system. Also mentioned was the need for distributed access to serials information. Some respondents noted library users had increasing expectations from library automation, including a need for more serials information.

Lower ranking functions included circulation and acquisitions. Circulation was low on the list primarily because so many libraries had automated it, some libraries having done so many years ago. Acquisitions was low because present systems were adequate or because no one in the library pressed for this function to move up in the queue.

2.3.2. Ideal

The librarians who were personally ranking the ideal order for implementing systems were asked to address five functions: circulation, acquisitions, serials control, public access, and bibliographic maintenance. Personal responses were expected to be, and were, affected by the positions the respondents held in the organization. There were five individuals at the associate director/AUL level for systems; two associate directors/AULs for technical services or technical services and automation; two positions in general library administration (assistant director for Budget, Systems and Planning, and associate director of University Libraries); and three positions where there was coordination of one or more functions of the systems from the operational side (coordinator for Online Catalog User Services; head of the Reference Department; and head of the Circulation Division and Library Automation Coordinator). (A list of the respondents, institutions, and their job titles appears at the end of this report.)

As with the "reality" question, the two highest ranking ideal functions were the public catalog, and bibliographic database creation and maintenance. Reasons for this high ranking were largely the same as those given above, such as the impact upon library users. In addition, respondents noted the traditional view of the library, with the catalog at the center, remained the same in the automated environment, particularly because other functions (such as circulation) could be run with the same data as the catalog. A few respondents stressed the importance of not only creating a database, but creating a clean database. One librarian highlighted the need for subject access, because that was how undergraduates approach a topic. On the practical side, one administrator placed this function highest because it was a highly visible item that could be used to justify the expense to the university community.

The next highest function was circulation. One reason for its high placement was that knowledge of the availability of the material in the public catalog was as important as knowing what the library owns. Another respondent noted that access by the users to the online circulation system data could help to make patrons less afraid when subject access became available in the public catalog, or when the card catalogs were removed. A public services librarian noted he would have preferred to redesign authority and bibliographic records before converting circulation records because both cataloging staff and the public catalog users would have benefitted from the presence of cross references not now available in the catalog. Another librarian noted that by having circulation follow the catalog, data integration problems could be avoided. Finally, one administrator observed circulation would be a lower priority because the library had a small user population, and automation of circulation might not be needed at all.

The fourth function mentioned was acquisitions. The importance of the function was to provide on order information to users of the public catalog. It ranked lower on the list, however, because it was seen as less necessary for the users to know the item was on order than to know what the library the library already owned or had available. Other respondents stated automation of acquisitions provided more advantages to the library staff than to users. Those who would have placed acquisitions higher on the list said automating acquisitions was necessary to keep up with the ordering of the large quantity of material required by a research library.

The last function on the ideal list was serials control. On a five point scale, only one library rated the importance of this function higher than the midpoint (two libraries); all others rated it as as the lowest function (six libraries; three not reporting). This low rating was based on factors as diverse as a personal predilection for monographs over serials to the magnitude and cost of the conversion task of serials. One librarian, who placed it lower than acquisitions, did so because serials check-in relied on the order process and therefore logically came after it. Another respondent gave a pragmatic reason for this low ranking: the library had not yet automated the function, and thus there was experience to show the library could survive without it.

2.4. Alterations Needed to Present Systems

An element to the management of an automated system was the recognition that there were always aspects that staff would like to see changed. Respondents were therefore asked what would be changed if anything about the present system could be improved.

2.4.1. Hardware Concerns

Two respondents noted the need for additional CPU power, and one noted the procedure to batch process, backup and restore the database required too much time. As to terminals, some respondents wanted changes to the workstations, such as an IBM compatible terminal specifically designed for public use in a research library, and a scholarly workstation -- a single terminal to provide access, through a single command structure, to all data from the bibliographic utility, the local system, and external databases, along with features such as word processing, etc.

2.4.2. Software and Functionality Concerns

One of the most common requests was for the system design to be completed and for all functions to be available. Also desired were improvements in options for searching, such as: the need for user cordial boolean operators and keyword searching; the ability to limit a search by format, location, etc.; and, the indexing of headings in upper and lowercase.

Other features mentioned were: improved methods for printing the results of public catalog searches; better management statistics and information (such as analysis of holdings and growth of collections by classification, by what was cataloged, and by the quality of the cataloging); use of a high level programming language for the software (rather than assembler); realtime, online bibliographic transfer with direct loading of information from the utility to local system; a multi-leveled accounting system for acquisitions, including listing of sub-funds and manipulatation of data rather than having to set up absolute funds); interfaces provided for other systems within the university; improved wording of help screens; prompting users with suggestions on what to do when a search doesn't retrieve any items; and refinements to the public access catalog screen displays.

2.4.3. Database Concerns

Staff wanted to see improvements to the existing databases, including to have non-Roman alphabets reflected in the system on a more widespread basis, and to use (or better employ) Library of Congress authority tapes to update the local authority file. Better integration of data across functions was mentioned by some libraries that had interfaced functions.

Libraries wanted enhancements to databases as well. In addition to retrospective conversion for specific collections or for the entire collection, libraries were also exploring ways to include periodical index access through the same terminal as the online catalog. This was possible by purchasing tapes to load into the local system, by using laser storage technology, or or by creating an interface/gateway into existing databases. Another idea was the creation of an online library resources directory that would integrate uncataloged materials into the public catalog, such as vertical files and planning documents.

2.4.5. Vendors

Libraries also wanted to see improvements in the services provided by the systems vendors. Some problems mentioned were unreliable vendor maintenance services, and the need to improve system and user documentation.

3. FUTURE TRENDS

In this last section, the respondents were asked to project the future of their systems, the difference of automation changes from other types of changes that have occurred in libraries, and what directions systems take in the future.

3.1. Life Expectancy of Hardware and Software

The respondents were first asked to predict how long they expected the present hardware and software would last before having to substantially upgrade it or replace it. In addition, the respondents were asked if there were any plans in the library for financing the replacements or upgrades.

3.1.1. Hardware

Two of the libraries were in the process of substantially upgrading central processing units. Half of the respondents expectated the CPU would last from two to five years without replacement or upgrade. Some indicated routine upgrading would be considered a normal part of the system operation.

3.1.2. Software

For this question, respondents were asked about replacement of the software or upgrading to a "new generation" of software. A new generation was distinguished from evolutionary upgrades. Evolutionary changes would occur through new releases of software; new generations would encompass substantial changes that resulted either in a new version or system that had far greater functionality than was previously available.

Despite this definition, many libraries continued to believe evolutionary changes would accommodate their needs indefinitely, and there was no expectation a whole new system would be needed. One respondent expected the library would stay with the present system vendor, and any change would depend upon what the vendor had in store.

Of those that did project a length of time, four respondents said upgrade or replacement would occur within five years, two said within seven to ten years, and one said within ten to fifteen years.

3.1.3 Financing

When upgrading or replacement of hardware or software became necessary, financing was expected to be done through: funding by the university as special appropriation; grants from outside the University; payments to the computation center from the library operating budget; and, loans with repayment from the operating budget.

3.2. Is Automation Different?

Three quarters of the respondents thought the implementation and operation of automated systems was different from the implementation of other types of changes in the library. Some observed automation implementation was particularly different when automation was first being introduced, but the lessons learned from automation had been assimilated into the general management of all changes in the library. Examples of such assimilation included the use of project management and the use of committees.

Profound effects both outside and inside the library were attributed to automation. Automation changes required more involvement from outside administrators or offices of the university. Inside, automation affected every position level in the organization. Although committees working in non-automation areas could come and go without ever signficantly affecting an individual's job, automation committees affected many jobs.

As the outside and inside decisions were merged, automation required library staff to have more specialized job knowledge. Decisions were more "public." For example, with non-automation decisions, the library often could make a decision in an insulated environment. If the university, however, had to make a substantial financial investment in automation, it was necessary for the library to meet the standards of other computer experts in the University.

On an individual level, automation was different in the level of anxiety it produced. At first, automation caused staff to feel threatened by the change, however one respondent reported staff were beginning to see the prospects of automation as exciting.

One respondent stated that although staff thought automation changes were different, the changes really should not be different. The higher risk of failure, or the technical complexities, have given automation changes a false mystique. One respondent believed the root cause for the perception that automation changes were dufferent was that librarians were not trained to be managers and make decisions, and it was the decisions that should be concentrated upon, not the automation itself.

3.3. Automated Library Systems: The Next Generation

The final question was blue sky: what will or should the next generation of systems have that the present generation does not? The survey did not limit the respondents in any way, and so it is interesting to note that the responses tended to formulated upon technology that is either available at present or is clearly under development. Not surprisingly, many of the changes that libraries were seeking to their present systems in section 2.4 above reappeared in this section as well. Future systems, therefore, were seen within the context of the next five to ten years. No one predicted am end to libraries nor to information systems.

Based upon the respondents comments, and the observations of the author, it is possible to provide a composite view of the future.

3.3.1. Expanded Databases and Services

Many respondents noted future systems will make more information and databases available, especially data that is not part of the typically monographic control upon which our present public access catalogs are premised. Information resources will be merged into a single access tool, including not only serials, microform sets and retrospective materials, but also the the information now available from online databases (such as BRS and Dialog). Full text retrieval and universal indexing are also anticipated.

This expanded access will be possible through a variety of means, including intelligent interfaces between the local catalog and the external services, or through the loading of portions of these databases into the local systems. Even small local files may become practical to load into the system; the "shoebox" file of slide collections, technical reports, and the campus or city newspaper, may all be part of the information system.

3.3.2. Workstations

A few respondents mentioned that we will see more sophisticated workstations for staff and patrons. The workstation concept will allow users to reach out beyond institutional walls. Audio, video and data communications will be incorporated into a single access system. This will provide scholars with the opportunity to retrieve from different databases on different windows, and edit the data into a cohesive text.

3.3.3. System Design and User Friendliness

The basis of the system will gradually begin to change. Future systems will be extremely user friendly and will be built upon the public access system for the benefit of the users. With a user-based design, library specific terminology, search strategies and screen formats will be minimized or eliminated, and the system would require no training for use.

Operationally, systems will allow a great deal of flexibility. A nonprogrammer will be able to set up software and easily select options. Software will be as easy and flexible to use as a microcomputer database management system. Artificial intelligence and expert systems will be part of the system design, and will assist library users by predicting their needs. For example, the system may help to develop search strategies and assist users in developing a topic into a paper, and automatically provide the gateway to external services.

3.3.4. Decentralization: Access and Management

In addition to linking to outside databases, there will be further development of linkages with other computing systems on campus, available through a common interface. Some libraries reported these services are already available through their university computing systems. Changes in hardware and software (through local and broad area networks) will make these developments increasingly sophisticated.

Decentralization will also allow libraries to alter internal management, moving away from centralized management and staffing, and distributing work geographically around buildings on campus. Local area networks will become prominent since the systems architecture will no longer require mass storage at a central site with commensurate high telecommunications costs. Libraries will have to continue to develop protocols to link local and external systems, and this will cause libraries ultimately to move toward the concept of being an information center, with the library having the opportunity to be the central node to bring departmental and individual files together.

4. OBSERVATIONS OF THE AUTHOR

Automated library systems have come a long way since the 1960s, when the first batch mode circulation systems were introduced. Even since the early 1980s, many libraries have moved from the RFP stage to actual implementation, and have gained experience with systems. In the 1960s and 1970s, we looked at automation as a way to solve problems of internal operating efficiency, and later, to provide improved user access. For the most part, however, automation was used as a sophisticed tool to performed traditional library functions.

The trend for the latter 1980s and 1990s will be for the library automation to merge into the larger environment of information management and communications, both within each university as well as the nation. It is unlikely at the turn of the century that we will see separate library systems as we have now,. Systems will be highly interconnected, and the databases that we have today may well become so "enriched" that their roots may be uncrecognizable. The systems certainly will not continue to appear as a series of unconnected systems with gateways, but rather will have far more integration. The library will be incorporated into a much larger information infrastructure within the university, and the organization of library functions will doubtless be based upon user needs, such as instruction and research, and not upon internal functions.

Much of the experience that we have gained with automation can serve us well if we incorporate the best of the lessons that the past has to offer. This Kit has attempted to start us in that direction. The future for automation will be the same as the past in one major respect: there will be no correct choices, only options and trade-offs. Choosing wisely will undoubtedly be the biggest challenge of all.

SURVEY

LIST OF RESPONDENTS FOR TELEPHONE INTERVIEWS

Name: Colleen Cook
University: Texas A & M University
Title: Head, Circulation Division and Library Automation Coordinator

Name: Shirley Glazener
University: Virginia Polytechnic Institute and State University
Title: Assistant Director of Libraries for Budget, Systems and Planning

Name: Bernard Hurley
University: University of California (Berkeley)
Title: Director for Library Systems

Name: Susan Logan
University: Ohio State University
Title: Coordinator of Automated Library Systems.

Name: David McDonald
University: University of Michigan
Title: Assistant Director for Systems

Name: Brian Nielsen
University: Northwestern University
Title: Head, Reference Department, and Coordinator of Sponsored Research

Name: Gail Persky
University: New York University
Title: Associate Director of Technical Services for Automation Planning

Name: Paul Evan Peters
University: Columbia University
Title: Assistant University Librarian for Systems

Name: Nolan Pope
University: University of Wisconsin
Title: Associate Director for Automation

Name: James Thompson
University: Rice University
Title: Associate Director

Name: Betsy Wilson
University: University of Illinois
Title: Coordinator for Online Catalog User Services

PROFILE: PRESENT SYSTEMS USED BY LIBRARIES INCLUDED IN THE SURVEY

LIBRARY	CIRCULATION	INTERLIBRARY LOAN	ACQUISITIONS	SERIALS	PUBLIC CATALOG	BIBLIOGRAPHIC MAINTENANCE	DATABASES
California (Berkeley)	Local	OCLC, RLIN	GLADIS	GLADIS	GLADIS/Melvyl	GLADIS	Interface to GLADIS
Columbia	BLIS	RLIN, NYSILL	BLIS	BLIS ?	BLIS	BLIS	PCs; interface to BLIS
Illinois	LCS	OCLC, LCS	LCS	unknown	LCS/WLN	LCS/WLN	Interface to LCS
Michigan	NOTIS	RLIN, NOTIS	NOTIS	NOTIS	NOTIS	NOTIS	Interface to NOTIS
New York Univ.	GEAC	RLIN, NYSILL	GEAC, RLIN	GEAC	GEAC	GEAC	Interface with GEAC
North Carolina	TRLN	OCLC, TRLN	TRLN	TRLN	TRLN	TRLN	Terminals/PCs
Northwestern	NOTIS	NOTIS, RLIN	NOTIS	NOTIS	NOTIS	NOTIS, RLIN	Interface to NOTIS
Ohio State	LCS	OCLC	Innovacq	Innovacq	LCS	LCS	Interface with LCS
Rice	NOTIS	OCLC	NOTIS	NOTIS	NOTIS	NOTIS	Possible interface
Texas A & M	unknown	OCLC	unknown	unknown	unknown	unknown	Terminals/PCs
Virginia Polytechnic..	VTLS	OCLC	VTLS	VTLS	VTLS	VTLS	Interface to CD-ROM
Wisconsin	Local	OCLC	NOTIS	NOTIS	NLS	NLS	Possible interface

Key to Terms:

BLIS	Bibliotechniques (vendor produced system)
CLSI	Vendor produced integrated system
DataPhase	Vendor produced integrated system
GEAC	Vendor produced integrated system
GLADIS	Local system for the University of California, Berkeley
Innovacq	Innovative Interfaces acquisitions system (vendor produced)
LCS	Library Control System (Ohio State); Library Computer System (Illinois) System was based upon the original design at Ohio State
Local	System was locally designed
Melvyl	Union public catalog for the University of California system (all campuses)
NOTIS	Northwestern system (software-based)
NLS	University of Wisconsin local system
NYSILL	New York State Interlibrary Loan system
OCLC	Online Computer Library System
RLIN	Research Libraries Information Network
TRLN	Triangle Research Libraries Network (Duke, U. of North Carolina, North Carolina State U.)
VTLS	Virginia Tech Library System

PROFILE: PLANNED SYSTEMS TO BE USED BY LIBRARIES INCLUDED IN THE SURVEY

LIBRARY	CIRCULATION	INTERLIBRARY LOAN	ACQUISITIONS	SERIALS	PUBLIC CATALOG	BIBLIOGRAPHIC MAINTENANCE	DATABASES
California (Berkeley)	Local	OCLC, RLIN	GLADIS	GLADIS	GLADIS/Melvyl	GLADIS	Interface to GLADIS
Columbia	BLIS	RLIN, NYSILL	BLIS	BLIS ?	BLIS	BLIS	PCs; interface to BLIS
Illinois	LCS	OCLC, LCS	LCS	unknown	LCS/WLN	LCS/WLN	Interface to LCS
Michigan	NOTIS	RLIN, NOTIS	NOTIS	NOTIS	NOTIS	NOTIS	Interface to NOTIS
New York Univ.	GEAC	RLIN, NYSILL	GEAC, RLIN	GEAC	GEAC	GEAC	Interface with GEAC
North Carolina	TRLN	OCLC, TRLN	TRLN	TRLN	TRLN	TRLN	Terminals/PCs
Northwestern	NOTIS	NOTIS, RLIN	NOTIS	NOTIS	NOTIS	NOTIS, RLIN	Interface to NOTIS
Ohio State	LCS	OCLC	Innovacq	Innovacq	LCS	LCS	Interface with LCS
Rice	NOTIS	OCLC	NOTIS	NOTIS	NOTIS	NOTIS	Possible interface
Texas A & M	unknown	OCLC	unknown	unknown	unknown	unknown	Terminals/PCs
Virginia Polytechnic..	VTLS	OCLC	VTLS	VTLS	VTLS	VTLS	Interface to CD-ROM
Wisconsin	Local	OCLC	NOTIS	NOTIS	NLS	NLS	Possible interface

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TRLN	Triangle Research Libraries Network (Duke, U. of North Carolina, North Carolina State U.)
VTLS	Virginia Tech Library System

APPENDIX: SPEC TELEPHONE QUESTIONNAIRE

In answering the questions below, if different answers are necessary for different functions, please answer the question in general terms, with examples from various functions.

LIBRARY PROFILE

To analyze in context the responses to the questionnaire, it is helpful to know the name of the actual systems that are planned or are in use. Please provide a quick statement about each of the functions listed below, including the approximate number of terminals assigned to each function.

1. Circulation
2. ILL
3. Acquisitions
4. Serials Control
5. Public Catalog
6. Bib Maintenance
7. Database searching
8. Other

PRE-PURCHASE/DESIGN DECISIONS

1. What methodology was employed :
   a. to decide whether to purchase or to design a system,
   b. to planning for the introduction of the system
      1. RFP and negotiations with: university, staff, vendor
      2. Contract and negotiations with: university, staff, vendor

   In particular, was a consultant employed? If so, what was the consultant exoected to do, and why were those responsibilities assigned to the consultant? What responsibilities were assigned to which position(s) in the library primarily for each of these stages, and why was that position chosen?

2. What were the dominant reasons behind choosing the architecture that you did:
   a. integrated versus interfaced systems
   b. mainframe based versus minicomputer based.

SYSTEM IMPLEMENTATION AND OPERATION

3. In implementing the system, where and why were responsibilities vested for systems and operations? Which types of responsibilities were vested in committees, departments or individuals, and why this structure was derived? Which position(s) had general ongoing responsibility for the coordination of changes required by implementation? (If this responsibility is decentralized to a few key positions for different functions, please identify the functions and positions.)

4. a. Were major changes accomplished as a part of implementing the system?
   b. What expected and unexpected changes occurred to policies and procedures as a result of the automation process?
   c. Were there more of the former or the latter?

5. Reality versus the Ideal:
   a. Reality: What function has the most pressing need for automation in your library at the present time, and why? Which one has the least need, and why?
   b. Ideal: If you could personally set the ideal priorities for automating library functions in your library, which functions would be automated first, and why?

6. If you could change anything about your present system (e.g., any feature, function, design specification, documentation, etc.), what would be the top five changes you would make, and why?

FUTURE

7. a. How long do you expect your present hardware will last before having to replace it? How do you expect to plan for and finance the replacement?
   b. How long do you expect your present software will last before you would need to upgrade to a newer generation of software? How do you expect to plan for and finance the replacement?

8. Has the implementation and operation of automated systems been different from the implementation of other types of changes in the library? (For example, in the use of committees, consultants, or the establishment of coordination responsibilities for certain activities outside of the normal organizational hierarchy.) If so, please explain.

9. What do you think the next generation of systems should have that the present generation does not? What features would you most like to see in your current system?

Planning Process

UNIVERSITY OF HOUSTON

AD HOC AUTOMATION COMMITTEE
August 21, 1981

The revised charge to the Committee is to prepare a plan for automating the University of Houston Libraries within the next five-ten years. This plan should include the following:

1. A list of the reasons why the Libraries wants or needs to automate. The benefits of automation.

2. A list of guiding principles or general requirements for automation within the Libraries, in priority order.

3. A list of the functions/activities to be automated, organized into natural groupings (modules or subsystems). Functions within the groupings should be in priority order, and the subsystems themselves should be assigned a priority.

4. A list of specifications/requirements for each subsystem to be implemented.

5. An estimate of the costs of the proposed automation.

6. An exploration of the alternatives to implementing the proprosed plan, with a recommendation as to the best.

7. A general strategy for implementing the plan, including:

    a. An outline of the steps or phases necessary to complete the project.

    b. A project schedule.

    c. How the automation will be financed.

Once this plan has been completed, the following steps will be necessary:

1. Distribute the preliminary plan widely, ask for input, and conduct hearings.

2. Incorporate staff input into the plan.

3. Present the plan to Mr. Downes for approval.

UNIVERSITY OF HOUSTON

DRAFT

ILS ADVISORY COMMITTEE

SUBCOMMITTEE ON BIBLIOGRAPHIC QUALITY CONTROL

CHARGE: To develop effective and consistent bibliographic control procedures for the ILS in order (1) to ensure the creation and maintenance of a high quality data base and (2) to resolve any problems that result from the attempt to integrate bibliographic records from five cataloging agencies into the ILS. This subcommittee shall meet quarterly or as the need arises.

MEMBERS: Linda Thompson, Chair
Virginia Davis
Charlene Jones (or designee)
Ann Kimzey (or designee)
Virginia Allen (or designee)

Candidate Systems

The Research Library Group's (RLG) Carnegie Study on Distributed Processing surveyed and evaluated library automation packages. While no single system was found to support all functions needed by Michigan and other RLG member libraries, three systems, Geac, BLIS, and NOTIS, were judged acceptable and likely to be substantially enhanced.

Geac is a Canadian company and is a leading force in the market. Their system is based on proprietary hardware and software. The system supports all functions (serials control is in test). Geac is the vendor of the Library's existing circulation system. However, we have rejected Geac from further consideration for four reasons. First, Geac's use of proprietary hardware and software results in an extremely closed system. Second, the system is not truly integrated. Circulation and the online catalog, for example, use different databases that must be synchronized, a task most sites have found difficult to accomplish. Third, there is doubt whether Geac can provide a system that can support 400 concurrent users. And fourth, because of substantial growth over the last two years the quality of Geac's technical support has deteriorated; this is especially disturbing given the proprietary nature of the system.

BLIS is based on software developed by the Washington Library Network (WLN) and is marketed by Biblio-Techniques. BLIS runs on IBM machines under VM and MVS. ADABAS is used as the DBMS and COM-PLETE

is the teleprocessing monitor. Some use is made of NATURAL but most of the code is in PL/1. The system supports an online catalog, acquisitions, and record maintenance. Circulation is under development and is scheduled for delivery early in 1986. Serials control is scheduled to be available early in 1987. We believe that an IBM 4381/M1 with 8MB of memory would be required to support 400 concurrent users. Approximately 14GB of disk storage would be needed. BLIS has been acquired by Columbia, Brown, Johns Hopkins, Indiana, and UC San Diego. While software has been installed at several sites, no customer has a production system running. All of the institutions that have selected BLIS, with the exception of UC San Diego, have received grant support or special subsidies. Columbia, Brown, Johns Hopkins have received Pew Foundation grants and Indiana will run the package on an existing machine that has excess capacity.

NOTIS was developed over the last ten years at Northwestern University. NOTIS runs on IBM machines under DOS, VM, and MVS. NOTIS is written in assembler and handles its own data management. The systems uses CICS for teleprocessing and supports an online catalog, acquisitions, serials control, circulation, and record maintenance. We believe NOTIS would require an IBM 4361/M5 with 8MB of memory to support 400 users. About 6GB of disk storage would be required. NOTIS runs at Northwestern University, Harvard, University of Florida, Auburn, Clemson, and Washington University. The system has recently been acquired by Vanderbilt, University of Pittsburgh, Brigham Young University, and Colorado State University.

Costs

BEST COPY AVAILABLE

BLIS and NOTIS offer a distinct choice in terms of technology, functions supported, and cost. Table 1 identifies capital costs for both systems by alternative method of operation. There are three ways in which an ILS could be operated:

1. the Library owns and operates the machine,
2. the Library owns the machine and contracts with an existing computer center on campus for operation (facilities management),
3. the Library contracts with an existing computer center on campus for computer time (timesharing - if this option is employed it is mandatory that all terminal devices on campus be able to easily connect to the host)

Cost estimates are provided for the first two methods. The latter category is not included as costs would depend upon the computer center involved.

Note that Table 1 differentiates between the cost of providing a system available only through terminals in libraries (labled LIBRARY ACCESS ONLY) and the cost of providing a system available throughout campus as well as through terminals in libraries (labelled NETWORK SERVICE).

TABLE 1

ILS CAPITAL COSTS
BY ALTERNATIVE

	NOTIS			BLIS		
	NETWORK SERVICE	LIBRARY ACCESS ONLY	DIFFERENCE	NETWORK SERVICE	LIBRARY ACCESS ONLY	DIFFERENCE
1. LIBRARY OPERATED NO FINANCING	$2,086,500.00	$1,897,100.00	$189,400.00	$3,270,730.00	$3,063,630.00	$207,100.00
2. LIBRARY OPERATED SYSTEM FINANCED	$2,752,000.00	$2,502,000.00	$250,000.00	$3,826,000.00	$3,552,000.000	$274,000.00
3. FACILITIES MANAGEMENT NO FINANCING	$1,815,400.00	$1,662,000.00	$153,400.00	$3,041,980.00	$2,870,880.00	$171,100.00
4. FACILTIES MANAGEMENT SYSTEM FINANCED	$2,394,489.00	$2,192,157.00	$202,332.00	$3,524,307.00	$3,298,629.00	$$225,678.00

The figures for capital costs include central site hardware, communications hardware, terminals, hardware installation, remodeling for a computer room, conversion of existing machine-readable records, and operating costs during the time the system is being installed and tested. The capital cost estimates assume that:

1. an additional 4 FTE will be required for a total staff of 7 FTE divided as follows:

   1 systems programmer

   1 applications programmer

2 systems analysts

1 database administrator

2 operators

2. terminal installation averages $500 per device
3. it will require 12 months after installation of the hardware and software to test the system, convert existing machine-readable records, install the terminals, and link the system to UMnet

Operating costs will run $525,000 during the first year of operation and will climb to about $637,000 for the fifth year of operation.[1] Some savings could be achieved in operating costs if the hardware is managed by the Computer Center. Such an arrangement would reduce personnel costs by $100,000 the first year and more in suceeding years. Actual savings would, of course, depend upon rates charged for facilities management.

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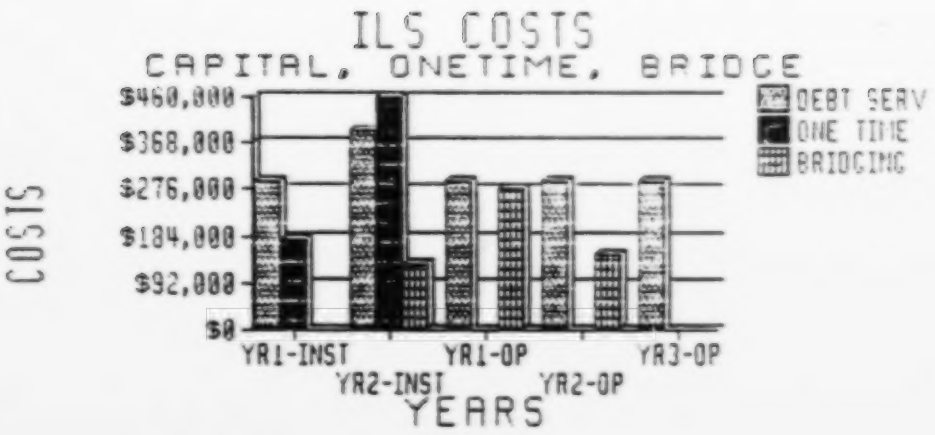
[1] This includes the $60,000 in operating costs necessary to make the system available throughout the campus

FIGURE 3



System Installation and Operation

Initial planning calls for installation of the online catalog, circulation, and records maintenance modules first followed by serials control and acquisitions. The Library will, at the completion of the three year period for which bridging funds are requested, fund the ILS operating costs through internal reallocation. Introduction of an ILS will, over time, alter the shape and content of the tasks within the Library. Preliminary analysis of such changes has identified $266,000 that can be reallocated to cover ILS operating costs over the first three years. Replacement of the card catalog with an online catalog will eliminate the need to file cards and the migration to an ILS will enable the Library to redesign procedures and workflow. During the first year of production $105,000 will be

reallocated from support of Geac to operation of the ILS. During the second year of operation another $136,000 will be available due to the elimination of card filing and maintenance. And in the third year $25,000 will become available through reallocation of INNOVACQ operating costs. In addition, the Library will phase out 18 positions during the first 18 months the system is able to support operations.

The Library is undertaking a review of policies and procedures, especially in the areas where some duplication of effort betwen units has been necessary because of lack of access to a centralized database or where the function of the automated system reduces or eliminates the need for staff intervention, in order to identify additional funds that can be reallocated to ILS operating costs. Those areas with high potential are circulation, pre-order searching, serials control, record maintenance, government documents processing, and records creation. In order to determine the potential for additional fund reallocation, a cost study will be undertaken this fall that will gather the data needed in order to restructure and realign library services.

Project Schedule

During the spring and summer efforts will focus on a detailed review of NOTIS and development of an implementation plan. Functional specifications are under review by staff groups and will be finalized by the end of June. NOTIS will be reviewed against the functional specifications and a decision reached by the end of July. Additional tasks in the project are identified in Table 3.

TABLE 3

ESTIMATED PROJECT SCHEDULE

TASKS	SCHEDULE								COSTS
	QTR1	QTR2	QTR3	QTR4	QTR5	QTR6	QTR7	QTR8	
1. FINALIZE CENTRAL SITE HARDWARE CONFIGURATION	======								
2. FINALIZE COMMUNICATIONS NETWORK	=========								
3. BUILD TABLE AND INSTALLATION FILES	==========	==========	==========	==========					
4. REMODEL COMPUTER ROOM		==========							$150,000.00
5. INSTALL CENTRAL SITE HARDWARE			======						$569,500.00
6. INSTALL PORTION OF COMMUNICATIONS HARDWARE			======						$300,000.00
7. INSTALL SOFTWARE				========					$145,000.00
8. CONVERT EXISTING RECORDS					======				$100,000.00
9. TEST NOTIS						=======			
10. DEVELOP CUTOVER PLAN				=========					
11. INSTALL REMAINING COMMUNICATIONS HARDWARE							======		$92,000.00
12. INSTALL TERMINALS							======		$300,000.00

Based on our preliminary analysis we believe that NOTIS best meets the needs of the University. NOTIS supports all functions, is substantially less expensive than BLIS, and has a proven track record. Should the detailed review of NOTIS reveal shortcomings which would prevent us from acquiring the system two alternative courses of action

could be taken. First, the Library and University could elect to delay acquisition of a system with the expectation that additional products better suited to our needs will emerge in the next 18 to 24 months. Or second, we could explore the possibility of a joint development effort with Northwestern that would remedy any deficiencies.

Conclusion

Based on the experience of other institutions, the evidence indicates that an Integrated Library System will create an environment whereby the Library will become an even more vital source of information and documents. The proposed system will come to be an important tool available through the scholars' workstation and will serve to integrate the various computing and information resources available across the campus. In this vein an Integrated Library System is in keeping with University's desire to provide state of the art computing and information retrieval resources.

NOTIS at Rice University

Introduction

This summary history of Rice University's acquisition of NOTIS as an integrated library system has been prepared for inclusion in this SPEC Kit in lieu of the usual documentation, which in Rice's case was intentionally not produced during the selection and acquisition process.

Background

Rice began a comprehensive retrospective conversion of its card catalog in 1981. We decided to convert first and buy a system later, on the grounds that system hardware could be expected to become cheaper and more powerful over time. A disadvantage of this choice was that local MARC fields had to be formatted without our being aware of the particular requirements of the system eventually to be chosen. Also, the schedule for the recon project imposed by the university did not allow for subject authority work. This effectively ruled out in advance any system without Boolean keyword searching. Conversion was done from the public catalog, in-house on new OCLC terminals, by temporary staff. OCLC records were found for 95% of the collection during the first three years of the project; in a second pass, 50% of the remaining titles were found in OCLC, and the remainder were input as new records. A side effect of the conversion was a massive increase in interlibrary lending requests from other OCLC libraries.

System Selection

Local considerations ruled out any system design at Rice, or the purchase of a system which would require extensive modification or staffing.

During the final year of the conversion project, members of the library staff surveyed the market for available systems. The approach taken was perhaps somewhat unusual, and was driven partly by constraints of time and funding, and partly by our observation that the traditional method of acquiring systems was often unsuccessful in other libraries, including some which we had the opportunity to observe rather closely.

The acquisition was directed by the Associate University Librarian, working with selected staff members chosen for their skills, interests, and dedication to the long-term interests of the library. No committees were formed, nor were any consultants hired. Since we were not going out for bids, we did not write specifications or a request for proposals.

Instead, we examined the available systems, quickly ruling most of them out for any one or more of a number of reasons. Among others, we eliminated any system which:

—was totally turn-key, such as CLSI (which had provided our previous, circulation-only system), GEAC, DataPhase, etc., or:
—was not installed in any fully operational site where we could examine it, or:
—was not supported by a company with a reasonably reliable financial future, or:
—could otherwise be eliminated based on information we already possessed.

The reason for the first of the above restrictions was that we had no desire to be locked into a single company for all of our hardware needs, including additions and expansions. We preferred to take advantage of ongoing competition in the marketplace.

We thus quickly narrowed the possibilities down to a small number of offerings, which we set out to examine in detail. These were:

BLIS, from Bibliotechniques
NOTIS, from Northwestern University
PALS, from Sperry Corp.
TOMUS, from Carlyle Systems
VLTS, from Virginia Polytechnic

Evaluation

We compared and evaluated these systems through the usual demonstrations, site visits, etc. More usefully, we challenged each vendor to demonstrate an ability to load records from our own OCLC tapes. We also insisted on unlimited dial-up access to a large database running in an installed on-line catalog subject to normal use. We then asked a number of library staff members, students, and faculty to examine and react to the different systems at length.

One of the vendors was unable or unwilling to provide such access. Their explanation was that remote access to their system was so difficult that it could not be undertaken without our having one of their staff members present. Another system, although it had numerous installed sites, could not provide access to one which had both a large database and acceptable response time.

Thus there were three final contenders. Two of those were NOTIS and PALS, which we examined over a period of several months from dial-up terminals and through visits to operational sites. The third was TOMUS, which Carlyle installed in our library, with seven terminals and a database of 163,000 of our OCLC records.

Our experience with TOMUS as a representative public catalog was encouraging. Within minutes of the system coming up, card catalog use dropped virtually to zero for the entire five months of the test, including times when the system was down. The keyword searching facility of TOMUS did, as we had hoped, more than compensate for the lack of subject authority control. Indeed, we observed that most subject retrieval utilized fields other than subject headings. We had asked Carlyle to construct a keyword-in-entire-record index, and soon into the test most users were using that index exclusively, rather than specifying particular fields to be searched.

Our experience with each of the three finalists was highly positive. We eventually chose NOTIS for a variety of reasons, many of them unique to Rice, and we have no reason at this point to believe that any one of the three would not have been successful.

Purchase

NOTIS software has a set price, varying only according to the operating system used, and runs on IBM-compatible hardware. Our funding permitted the purchase of a new IBM computer to be dedicated to NOTIS, so we chose that route rather than any of the several less expensive but also less desirable options. We acquired Telex terminals for the most part, since at the time IBM had still not come to its senses and produced a library terminal.

Our software contract was an expansion and revision of one previously negotiated between Northwestern and another university. The negotiation process was short and mutually satisfactory, in part because NOTIS is a well-established system with most of its anticipated pieces already in place.

Installation

We signed a contract with NOTIS in June, 1985, and sent out purchase orders for hardware in July. The hardware, operating system software, and NOTIS software were installed early in October. We began test loading of the database later that month, while simultaneously installing wiring and cabling, making connectors (etc.), undergoing training in the technical services modules, and building parameter tables for all the modules. We discovered that a number of idiosyncrasies in our local holdings formats required programming changes by NOTIS staff. By the end of March, everything was ready for system implementation. The actual database load of 600,000 records took 18 hours. Public terminals were not installed until the beginning of May, to avoid the confusion which would have resulted from the appearance of a new form of catalog at the end of the academic year. Circulation came up in mid-May, after CLSI item records were downloaded to NOTIS through a CLSI terminal port.

Conclusion

We chose not to follow the standard approach to system selection for a number of reasons, the main one being our belief that that approach is slow and ineffective, and serves primarily as a vain attempt to protect the selectors in case a disaster ensues. We felt that the best way to protect ourselves from a disaster would be to avoid one, so we relied heavily on a small number of staff members of exceptional ability, three of whom deserve special commendation: Kay A. Flowers, Circulation/Systems Librarian, who serves in place of the 3 F.T.E. programmer/analysts we can't afford; Anne G. Adler, Director of Processing Services; and Shirley Wetzel, Retrospective Conversion Supervisor.

James C. Thompson
Associate University Librarian
May 16, 1986

OHIO STATE UNIVERSITY

OSU Communication

Subject Ad Hoc Committee on implementation of an automated acquisition system.

Date April 4, 1984

From

To

By this memo, I am asking you to serve as chair and those listed below to serve with you on an Implementation Committee for an Automated Acquisition System.

The other members of the committee are as follows:

The Ad Hoc Committee on Space Allocation, whose charge is attached will report to Divisions Heads, however, it would undoubtedly be useful for Mike Grimes, as chair of that committee, to serve as an ex officio member of the Committee on Implementation. Administratively your committee should plan on reporting to the Ad Hoc General Review Committee for implementation of an automated system and ultimately to Division Heads, While I certainly do not expect you to keep detailed minutes, I do ask that the Committee, in the person of Dr. Straley, maintain a record of discussion topics, decisions reached and recommendations to be made to the General Review Committee.

There are some assumptions upon which the Committee should base its work:

1. The system is to be delivered by June 20, 1984. We should plan to be up on the system at the beginning of fiscal year 1985, at which time our agreement with LIBRIS will be cancelled.
2. Monographic Acquisition Division will be in charge of the physical maintenance of the system, including tape loading and unloading, backing up the system serving as the coordinating point for all maintenance and service issues.
3. The Ad Hoc Space Allocation Committee will undoubtedly be making recommendations, based on their charge, that will influence your decisions and vice versa. I assume that there will be close communication between the committees.

The specific issues that I expect your committee to address are the following:

1. Initial transfer of present functions to the on-line acquisition system. In order to move into full use of the system, current functions need to be transferred quickly. There will undoubtedly be many additional changes and adaptations as we learn more about the system and its relation to our present and OSU's required procedures.

2. Establishment of priorities for unit and continuation order transfers to the new system.
    a. Among other questions, how do we encumber free serial monies by fund when there is, at present, no initial allocation or encumbrance?
    b. When or do we convert outstanding unit orders and carry forward funds?
    c. How long must we run dual accounting systems?
    d. At what point do we replace SAPP with Innovac; can we run a tape of the bibliographic SAPP information to establish the primary data base on the automated serial financial system.

I assume that in your review process you will identify major, as well as a number of minor, issues that must be addressed. Please feel free to find, evaluate and make recommendations on any topics you feel appropriate.

At present, a version of our current fund structure has been presented to the automated system vendor; however, I will be working on an initial restructuring of funds prior to installation of the system. As soon as I have a draft ready I will forward it to you for the committee's comments.

If you have any questions or if I can be of any help, please let me know.

GDH:cv

OHIO STATE UNIVERSITY

OSU Communication

Subject Ad Hoc Committee on Space Allocations,
Task Force on Innovative Interface (INNOVAC)

Date March 26, 1984

By this memo I am asking you to serve as chair and those listed below to serve with you on a committee to allocate space to provide for installation of the INNOVAC system.

The other members hereby asked to serve on the committee are:

Specifications for space and electrical needs are attached. In making recommendations for the arrangement of our limited space the following assumptions should be made:

1. The Monographic Acquisitions Division will be responsible for the physical on site maintenance of INNOVAC.
2. The CPU (central processing unit) and the tape deck will reside in 036.
3. There will be eight terminals and two printers, 5 terminals and one printer in 040N and 3 terminals and one printer in 036.
4. There will be a satellite installation at Health Sciences Library consisting of one terminal and one printer. They should be asked to provide site information to us.
5. All of the INNOVAC in Main Library, as well as that in Health Sciences, must be run off a dedicated electrical circuit. Gerry Guthrie will have to be approached on this issue, once locations are set.
6. Communication connections with University Systems must be established. Karlene and Susan will be especially helpful in this matter.

Based on the above assumptions, I am asking your committee to recommend reallocation of space to accommodate the new system. After the very successful move last spring I don't think we need to do a massive change, but rather to shift things slightly. Please consider heretical options, particularly in 040N, including, but not limited to:

1. Compacting of CSR and removal of resulting empty cabinets.
2. Shifting of current check-in files.
3. Removal or rearrangement of mail sorting area.

I would also like your recommendaitons for equipment necessary to house INNOVAC, including work stations, chairs, etc.

As you know, the system is out on bid. Until the bids are received and the final one let by the University, we cannot move on actual wiring, but the investigations, planning and preliminary establishment of work dates should be accomplished as soon as possible. I am most grateful to you for your help, and the applications of your skill, in this project.

OHIO STATE UNIVERSITY

OSU Communication

Subject Subcommittee on LCS Headings Control

Date March 17, 1983

From

To

In order to facilitate the continued planning and implementation of LCS headings control, I am asking you to accept a one-year appointment as chairperson of the Subcommittee on Headings Control beginning immediately and not to exceed one year. By a copy of this memo, I am asking the following to serve with you:

The specific tasks to be accomplished by this Subcommittee include:

1. Complete programming specifications for the processing of Library of Congress Name Authority update tapes.

2. Complete programming specifications for the processing of Library of Congress Subject master tape.

3. Develop specifications for reports to come from the processing of the Library of Congress authority tapes for LCS.

4. Develop a plan for the retrospective conversion of the OSUL card authority files.

5. Define improvements for headings display on LCS.

6. Recommend changes in cataloging policy which will facilitate user access and use of the LCS headings file.

7. Identify problems in headings and propose solutions to these problems.

8. Monitor the development of authority control nationally and keep the OSU Libraries aware of pending changes which will affect LCS.

The reporting line for this Subcommittee is to the Committee for an Online Catalog.

WJS:vm

OHIO STATE UNIVERSITY

OSU Communication

Subject: Task Group on Describing current LCS reports for collection management.

Date: November 23, 1982

From:

To:

I ask that you chair a Task Group to describe the current output reports from LCS for collection management -- along lines of the discussion in the meeting of November 22 -- and by this memo I am asking the following to serve with you:

What I think we need is a clear description of what records are produced by LCS on what frequency basis; why the records are produced; and how they are best used. The purpose of the description is to provide documentation (and thereby understanding) for all who receive these records and to promote the most effective use of them.

I do not view this as a long-term effort; and in fact hope that you would be able to complete such descriptive documentation in a couple of sessions.

Let me know if you have questions. I'll be happy to meet with the Task Group at the outset if that is deemed desirable.

WJS:vm

OHIO STATE UNIVERSITY

OSU Communication

Subject Subcommittee on LCS Authority Control

Date July 16, 1979

From

To

In order to facilitate the continued planning and implementation for LCS authority control, I am asking you to chair a Subcommittee on LCS Authority Control; and I am herewith requesting the following to serve with you:

Since much work is still necessary in the design and implementation of the LCS authority control, and since Ms. Miller would normally consult with these individuals as information sources, it is appropriate to have them officially appointed and thereby acknowledge their function in the development of the LCS authority control.

The specific tasks which I would assign to this subcommittee are:

1. Development of the online maintenance specifications which the LCS programmers have designated as Phase 3 of their document Proposal for Closing the Card Catalog of OSU Libraries.

2. Preparing a recommendation for the purchase, use, and archiving of the Library of Congress authority tapes.

3. Serving as programmer consultants as the programming of LCS authority control proceeds.

4. Monitor the development of MARC authority formats, specifically series authority and the Library of Congress implementation of the authority formats, particularly series and subjects.

5. Monitor the development of the OCLC authority control capability and recommend the procedure for "integrating" the OCLC capabilities with LCS authority control.

The term of appointment for the subcommittee should be through the implementation of complete LCS authority control - tentatively three years; and the reporting line is to the Committee for an online Catalog.

WJS:vm
cc:

OHIO STATE UNIVERSITY

Subcommittee on LCS Holdings Records

June 21, 1979

I am asking that you chair a Subcommittee on LCS Holdings Records (a subcommittee of the Committee for an Online Catalog), and by this same memo I am asking the following to serve with you:

Charge

* Recommend corrections, changes and improvements in LCS which will enhance the format, maintenance, and use of the serial/monoset holdings records.

* Report to the Committee for an Online Catalog.

Membership

The Subcommittee shall be composed of seven regular members appointed by the Director of Libraries. An eighth member, the Coordinator of Automated Library Systems, shall serve as Chairperson. The seven regular members will be appointed for two-year staggered terms.

I am very grateful for the expressed willingness and interest to serve in this capacity. The specific issue in question is a critical one with reference to how easily and well staff and patrons can accurately interpret serial/monoset holdings recorded on LCS.

WJS:vm
cc:

OHIO STATE UNIVERSITY

OSU Communication

Subject Committee on Education for Online Library Systems

Date June 21, 1979

From

To

I am asking that you chair a new committee to deal with the broad area of staff and user education/instruction for online systems; and by this same memo I am asking the following to serve with you:

Appointment Through

The charge/committee description is attached; and it should be understood that this assignment falls within assigned time according to the recently approved policy on that issue. I am most grateful for the expressed willingness and interest to take on responsibility for the critical area of the ease and effectiveness with which LCS can be used by staff and patrons. The best technical design possible is rendered fallow if system patrons cannot easily and effectively use the system to desired ends.

WJS:vm
cc:

The Ohio state University
Form 7CB—Rev 5 78 Stores 53810

OHIO STATE UNIVERSITY

6/21/79

Committee on Education for Online Library Systems

Charge

* Initiate and coordinate the development and continuation of programs and materials which will instruct library patrons and library staff in the use of LCS. This is not intended to preempt staff instruction programs developed by individual units which relate to LCS and/or OCLC use in specific areas.

* Initiate and coordinate public relations efforts relating to LCS for the OSU community, and for other individuals, groups or organizations.

* Recommend corrections, changes and improvements in LCS which will enhance and facilitate patron and library staff use of the system.

* Serve in an advisory capacity in responding to questions concerning the use of LCS and OCLC by OSU patrons and library staff.

* Coordinate the Committee's activities with the Committee for an Online Catalog, the Committee for Library-Patron Communication, the Committee for Continuing Education, and the Director of User Education.

* Report regularly to the Director of Libraries and the Libraries' Automation Committee.

Membership

The Committee shall be made up of five regular members, appointed by the Director of Libraries. A sixth member, the Coordinator for Automated Library Systems, shall serve as Co-Chairperson on a permanent basis.

The five members shall serve for two-year staggered terms, and one of these members shall be appointed by the Director of Libraries to serve as Chairperson on a one-year basis.

OHIO STATE UNIVERSITY

OSU Communication

Subject Committee for an Online Catalog

Date June 21, 1979

From

To

I am asking that you chair a new committee broadly concerned with the Library's transition to an online catalog, and I am herewith requesting that the following serve with you:

The charge/committee description is attached; and it should be emphasized that service on this committee falls under assigned time according to our recently approved guidelines. Needless to say the Committee's work is vital to our success in entering a new era of catalog control, and I very much appreciate the expressed interest of this group in serving this purpose.

WJS:vm
cc:

See reverse side for addressing
The Ohio State University

Committee for an Online Catalog

Charge

* Advise and recommend relative to development of and transition to an online catalog. This includes consideration of issues related to "freezing" the public card catalogs, but does not involve per se the change from AACR I cataloging code to AACR II.

* Analyze the potential interrelationship between OCLC and LCS in order to make recommendations concerning the integration between OCLC sybsystems and LCS.

* Recommend corrections, changes, and improvements in LCS which will enhance its use as an online catalog.

* Serve in an advisory capacity to the Coordinator for Automated Library Systems who responds to LCS programming questions which relate to input, storage, and display of bibliographic records on LCS.

* Coordinate activities with the Sub-Committee on LCS Holdings Records, the Committee on Education for Online Library Systems, and other library units and committees as appropriate.

* Report to the Director of Libraries and the Libraries' Automation Committee.

Membership

The Committee shall be composed of six regular members appointed by the Director of Libraries. A seventh member, Carol Krumm, will serve as a staff resource person on the Committee. An eighth member, the Coordinator of Automated Library Systems, shall serve as Chairperson. The six regular members will be appointed for two-year staggered terms.

OHIO STATE UNIVERSITY

OSU Communication

Subject Task Force on the Change-Over to On-Line Serial Records
Date May 4, 1977

From

To

I am asking that you chair a task force to be concerned with the many and various issues relating to (1) the general use of on-line serial records within the LCS system, (2) the decision whether to opt for OCLC-based on-line serials check-in, and (3) the inter-relationship (if any) between the LCS serial records and the potential OCLC file. I am, by this same memo, asking the following staff members to serve with you:

The charge to this Task Force includes, but need not be limited to, the following elements:

* Determine, as soon as possible, the cost/benefit of using OCLC check-in for OSU serials; the cost/benefit of alternative check-in systems; an estimate of the cost to convert the OSU serial check-in records to OCLC; the sources of cost recovery if OCLC check-in is recommended; and the effect of decentralized OCLC check-in in the OSU Libraries -- culminating in a recommendation regarding the use of OCLC check-in at the OSU Libraries.

* Develop a plan for converting selected physical volume holdings to machine-readable form for LCS. Considerations are: (1) rationale for inclusion (a. user/patron; b. technical services aspects) (2) detailed work procedures (3) conversion work assignments and (4) costs, time tables, and priorities.

* Develop a plan for improving the serial holdings display on LCS including examination of the use of physical versus summary holdings statements and the clarification of incomplete or otherwise confusing holdings statements. Also investigate whether the LCS serial record can be expanded to include notes regarding title changes, etc.

* Plan for the maintenance of the LCS Serial Holdings File; including investigation of OCLC/LCS interface feasibility, the relationship of the Central Serial Record and/or the OCLC based serial record to LCS, and methodology of LCS maintenance if manual check-in is continued.

* Coordinate activities and exchange information with the concurrently operating Task Forces on the Change-Over to an On-Line Catalog and on Education for Patron/Staff Use of On-Line Systems.

* Act in a liaison capacity in answering questions raised by programmers as they proceed with development of the LCS Serial Holdings File.

Assignments can be accomplished by the Task Force as a whole, through sub-committees drawn from Task Force members (appointed by the Chairperson), or through ad hoc sub-committees to be appointed by the Director upon advice of the Task Force Chairperson.

Since this Task Force effort is so vital and will doubtless require considerable time, I am designating your and the Task Force members' participation as an assigned-time activity.

Please accept my advance thanks for your willingness to take on this most important of endeavors as we move toward an on-line mode which can be acceptable to and effective for both the library and its users. I look forward to the Task Force report. I would also be pleased to meet with the Task Force early on in its deliberations in order to amplify/elucidate/clarify the charge, and indeed at any time throughout the course of proceedings.

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REPORT OF THE AD HOC COMMITTEE ON FUTURE INFORMATION SERVICES

Introduction

The charge to the Ad Hoc Committee on Future Information Services was to explore future directions for informational services at Texas A&M University Library and to develop a plan to guide the Library in terms of automated access to information into the next decade.

In exploring future directions for automated information services, the Committee members researched and wrote papers on the following topics:

1) the user
2) information
3) access to information
    a) means and technology
    b) the role of libraries in the future
    c) the role of librarians in the future
    d) macro and micro organizational considerations for libraries in the future
    e) fiscal considerations.

These essays are attached to the report as appendices.

The body of the report consists of a series of recommendations organized under each of the broad topics outlined above. As a whole, these should be considered as a plan to guide the University Library through the upcoming decade.

Philosophical Outlook

Underlying the recommendations are several principles which guided the Committee in its deliberations. Premier among these principles is the concept of utilizing informational technologies to enhance levels of service to users. The Library will aggressively seek to integrate electronic information transfer capabilities as they become available, feasible and cost-effective. Two major goals became clear in the course of the Committee's discussions: (1) to supply information in all forms to users on a no-charge basis, and (2) to establish the University Library as the primary information center on campus. A prevailing thread through the Committee's deliberations was the recognition of the extraordinary demands that will be placed upon library managers in the next decade. Library administrators must carefully choose a path which will take advantage of developing technology without losing the benefits of traditional information control. Difficult decisions must be made. A delicate balance must be struck, for instance, in allocating funds for purchasing printed materials and providing online access to users. Finally, discussions of the library user dominated every topic investigated by the Committee.

Users

Within the next twenty years, the definition of the Texas A&M University user group will change significantly. Technology will

extend the sphere of the Library's influence beyond present geographical boundaries. Future users will be more computer literate than users of today and will be more demanding of the benefits available to them from computerized services. User training in new information technologies will be a critical issue facing librarians in the upcoming decade. Librarians must be prepared to train several levels of users who will have varying levels of sophistication in automation.

It can be expected that some users will continue to need the most basic of instructions in library use, while others will seek proficiency in online searching at varying levels of difficulty. Thus the teaching function of the academic librarian will not diminish in the future; the need to acquaint the uninitiated with informational resources and their access will remain a significant function of the librarian into the foreseeable future.

Although the use of improved technologies will foster the growth of the University Library's user group, levels of responsibility to the varying segments in the expanded user group will not be equal. Roughly speaking, users in rank order of priority might be considered as follows:

1) students (former and present), faculty and staff of the TAMU College Station campus;

2) TAMU system personnel and students;

3) HARLiC users;

4) local area residents;

5) Texas state residents;

6) U.S. residents;

7) international users.

Recommendations

The User

1) An emphasis should be placed upon user training during the transition from a print to an online mode of information transfer.

2) The University Library should strive to offer remote access capabilities to local bibliographic databases and to other automated databases.

Access to Information

Means and Technology

1) As is practical and feasible, the University Library will substitute electronic access for information sources previously published in printed form. Little used and/or expensive titles will receive first consideration for such substitution. Cooperative purchases of electronically stored information will be considered.

2) Full document delivery to campus users should be instituted as soon as remote access to local bibliographic files becomes commonplace. The viability of a full document delivery

program should be phased in by offering services to West campus users in the near future.

3) The Library should aggressively pursue options for providing electronic access to uncataloged collections.

a) The use of commercial databases for providing partial access to some uncataloged collections, e.g., NTIS and U.S. documents materials, should be expanded.

b) If an uncataloged collection is viewed as a suitable candidate for cataloging through a cooperative project, the Library should not catalog it locally. The Library will seek to engage in cooperative cataloging projects to fulfill a professional responsibility and to gain access to cooperatively produced machine-readable bibliographic data.

c) The Library should provide local access to all uncataloged materials considered unique or otherwise unsuitable for bibliographic control through multi-library cooperative projects. Local access assumes a wide range of bibliographic control. Some categories of uncontrolled materials should be assigned an indexing type of access, while others should be assigned partial or full cataloging types of access.

4) The Library will provide remote access to materials housed in the Library and to other material available through library services.

5) The Library will provide the means for users to serve themselves when technology permits through the performance of their own searches.

6) The Library should assume responsibility as principal catalyst for obtaining funds and resources, and for providing services in satisfying informational needs of users.

Access to Information

Organizational Considerations

Macro Considerations

1) Printed and electronic versions of the same information should be bibliographically controlled together. The format or form of information will not be the overriding organizational determinant; the substance of the information will prevail.

2) Job descriptions for library staff should be rewritten to include some combination of computer literacy, an emphasis upon subject specialization when appropriate and other non-traditional skills.

3) The Library should evolve in tandem with the application of information technologies and user needs. Flexibility and innovation in organization will be of extreme importance now and into the future. Specific needs and their significance to the Library organization can be expected to change quickly and radically. Staff should be allocated in light

of need; a continual reassessment of staff needs is recommended as the environment changes. Staff should be moved as dictated by demand. Organizational models other than the traditional pyramidal structure, e.g., a matrix pattern, should be considered in light of future needs.

Micro Considerations

1) A fund raising unit should be established in the Library to generate the large amounts of funding necessary to purchase equipment for automated services and other needs.

2) An automation staff person should be added to deal with public information systems.

3) The Library should strive to participate as a leader in networking and similar cooperative systems, e.g., bibliographic utilities, and regional and national automated informational services.

4) The Library should strive to become a center for storing and servicing data files. Other campus facilities involved in working with such files should be coordinated through the Library in order to maximize use of funds and staffing and to ensure the concept of centralized information control.

5) The Library should strive to take advantage of new technologies and to participate in new modes of information distribution as available.

The Role of Libraries

1) The Texas A&M University Library should promote flexibility in moving from a print-on-paper orientation to an online access mode of thinking. Libraries as warehouses of printed information will decline rapidly in relevance in the next decade.

2) The concept of the library without walls should be tested immediately by offering remote access to Data Phase and full document delivery services to West Campus users.

3) Planning should begin immediately for the construction of a new building to satisfy space needs of the Library. While new technology will provide more efficient means for storing data, it cannot be relied upon to solve all of the Library's space problems. The concept of off-site technical processing should be explored.

4) The Evans Building should be immediately reassessed and reviewed for space utilization in light of new technologies and changing staff and user needs.

5) Patterns of collection development should be redirected to include the following principles and/or concepts:

a) Collection development efforts shall emphasize the acquisition of space-saving formats such as micro and electronic formats with maximum retrieval capabilities.

b) On a case by case basis, the Library should eliminate

expendable materials, e.g., print duplicates of journals and indexes available online.

c) Materials budget allocations should be expended with the uppermost goal of satisfying user informational requirements; i.e., access to information will be the critical issue in the future and not the storage of information in printed form.

d) The Library should become a center of an automated information network on campus.

The Role of Librarians

Recommendations

1) Funds and time should be allocated to retraining professional staff in automated information applications as they become available.

2) In view of technological advancements and the University's emphasis upon graduate education, there will be an increased need for subject specialization in the professional staff. As a result, an increased emphasis should be placed upon recruiting staff with advanced degrees in addition to an MLS.

3) The Library should bring pressure to bear in the profession at large to train library science students in innovative information technologies.

4) The Library should place a high priority upon becoming nationally competitive in salaries in order to attract the most

qualified people.

5) Staffing needs should be continuously reassessed in light of service needs.

Fiscal Considerations

Recommendations

Introduction

To provide automated services to users on a regular basis, it will be necessary to reconsider traditional library budgeting philosophies. Materials budget lines might be renamed "Acquisitions and Access" lines to conform with a shift in emphasis from owning to accessing informational sources. It can be expected that there will be a gradual shift in the ratio of acquisitions and access budget lines from acquired printed sources to access services over the next ten years.

The consideration of charged vs. no-charge services will be of great importance. Eventually, the Library should supply information to users on a no-charge basis no matter how the information is accessed or acquired. It will be of some significance, therefore, to allocate regular sources in the Library's budget for access services. A gradual, phased-in approach to incorporation of access services into the mainstream of library services will be based first upon the consideration of feasibility and practicality both in terms of funding and

staffing. In forecasting a phased-in approach the following recommendations could be made:

1) The graduate student AIRS program begun in the fall of 1983 should be continued and expanded.

2) There should be an increased acquisition of backruns of periodicals in microformat; de-selection of hard copy equivalents should progress in tandem with acquisitions in microformat if use patterns allow.

3) On a title-by-title/case-by-case basis substitute access to online indexes for print subscriptions.

4) The Library should provide dial-up access or unlimited in-house use of databases for which the Library would pay a fixed fee for unlimited access.

5) The Library should provide current awareness services.

6) Non-bibliographic databases should be made available to users on an unlimited access basis if cost-effective and feasible.

7) Full-text databases should be made available to users on an unlimited access basis if cost-effective and feasible.

8) Acquiring databases and allowing users unlimited access in the local environment should be considered.

9) In view of the change in emphasis from owning to accessing, the Library should recommend that ARL consider access budgets, e.g., funds spent on automated information retrieval

services and the number of databases accessed, as significant statistics in determining library quality which should be compiled, analyzed and disseminated as part of the ARL Statistics; particularly as a variable in the ARL Library Index.

10) The Library should allocate additional staff positions to meet the increased demand for automated services.

11) The Library should allocate funds for professional staff development for retraining, updating skills, and providing opportunities for staying abreast of developing technologies.

12) The question of access to electronically transmitted information gives rise to the problem of supplying copies (printed, tape, diskette, etc.) of information accessed online to users. The Library should gradually move to providing copies of such information on a no-charge basis. Again it can be expected that such duplicating services will be phased-in as practical and feasible.

Subject to copyright restrictions, duplicating services would be provided for the following:

1) Automated Services

   a) Holdings from the online public catalog

   b) Circulation information

   c) OCLC information from public access terminals

   d) Online printing charges for bibliographic data, full-text and non-bibliographic data

e) Offline printing charges for bibliographic data, full-text data and non-bibliographic data

f) Information retrieved from databases

2) ILL services

3) Microtext materials

4) Audiovisual materials

5) Software

6) Xeroxing of printed materials

APPENDIX

Formal Evaluation of Vendor Proposals

To evaluate the complex proposals of library automation vendors, the Heard Library staff divided the systems into nine functions. A different team of the staff evaluated each function for all vendors. The teams were asked to summarize their assessment of a proposal in a given function using a score from one to ten. A steering committee reviewed the reports of the teams and assigned weights to the functions. A weighted average of the scores for each vendor then indicated the overall rating of the proposal. Of course, the formal evaluation provides only a partial basis for a decision. A final decision requires additional judgement, taking account of factors like cost not included in the formal evaluation. The formal process is summarized here.

The general assignment of each team follows:

- Acquisitions: How well does the system provide for tracking materials ordered and the associated accounting for funds?

- Cataloging: How well does a system provide for the cataloging of materials?

- Authority Control: How well does a system allow the library to control headings used in the catalog?

- Search: How does the catalog look from the point of view of the user? What search strategies are allowed, what help provided?

- Serials: How well does the system provide for the tracking of serials subscriptions with the special holdings information and claiming required?

- Circulation: How well does the system provide for the circulation of materials including reserve room collections?

- Management Information: How much information does the system provide to library managers that may be useful in evaluating and planning library operations?

- Additional Capabilities: What growth path does the system provide for new services, gateways to remote databases and the like?

- Support: How well does the vendor support the system and how much responsibility will the vendor assume for the total performance of the system?

Each team was asked to assign a score from one to ten to each vendor's proposal in the function assigned to the team. A score of ten means the system delivers everything we could want; a score of one means the vendor is vacant in this category. A score of five means the system is marginally workable. From two to four indicates expectation in development. From six to nine indicates performance level. Ties and decimal ratings were allowed. Each committee justified its rating with a few sentences indicating the important differences in vendors in the given function. The attached table reports the ratings as adjusted by the steering committee.

To summarize the overall rating, we could take an average rating across the nine functions as reported at the bottom of the raw rating columns. However, we may not view all nine functions as equally important. For the Heard Library, an automated circulation system and an effective public access catalog are of highest priority. We have an automated acquisition system and so acquisitions is of less urgency. Management information systems and added capabilities will be valuable but are not as important as the more fundamental features of the system. By assigning differential weights to the functions as shown in the first column of the table, we can find a weighted average of the ratings. The weighted average ratings are not very different than the average raw rating. The differential importance of different functions has not had much effect on the choice of system.

The formal evaluation then reinforces judgements less formally derived. The Dataphase proposal does not have the top score in any function and its average score is less than marginally adequate. OCLC's proposal does not top any category, but several of its functions are acceptable. When Dataphase has a public access catalog, serials and acquisition system and when OCLC has a serials and acquisition system, then they will become competitive. Our rating reflects the systems as they are available to assess in the time frame we targeted.

The GEAC and NOTIS proposals are close in the formal evaluation. GEAC is at least marginally adequate in all but authority control and NOTIS is better than marginally adequate in all categories. GEAC's strength is in circulation and in the level of responsibility assumed by a turnkey vendor. NOTIS's strength is in its catalog, serials, and authority control. Its weakness is in support. Northwestern provides less software support and assumes less responsibility than a turnkey vendor. Of course, Northwestern and GEAC also continue to develop their products. GEAC has improvements in authority files in development as well as in added capabilities. NOTIS plans improvements in circulation, acquisitions, and search systems.

Looking beyond this formal evaluation of functions, we consider the success of the systems in libraries of the size and character of our own. And we look at the price. These factors lean markedly toward Northwestern's system.

SUMMARY EVALUATION OF VENDOR PROPOSALS

Heard Library, August, 1984

Committee	Weight	DATA PHASE Raw Rating	DATA PHASE Weighted	GEAC Raw Rating	GEAC Weighted	NOTIS Raw Rating	NOTIS Weighted	OCLC Raw Rating	OCLC Weighted
Acquisitions	7	2	14	7	49	8	56	2	14
Add Cap.	3	4.5	13.5	7	21	8	24	6	18
Authority	9	2	18	4	36	9.5	85.5	8	72
Cataloging	9	4	36	7	63	9	81	6	54
Circulation	10	6	60	9.4	94	8	80	4	40
MIS	4	2	8	8	32	8	32	6	24
Search	10	1	10	8	80	8	80	4	40
Serials	9	1	9	6.5	58.5	8	72	1	9
Support	10	8	80	8.4	84	6.5	65	7	70
TOTAL	71	30.5	248.5	65.3	517.5	73.	575.5	44	341
WEIGHTED AVERAGE RATING			3.50		7.29		8.11		4.80
RAW AVERAGE RATING		3.39		7.26		8.11		4.89	
			DATA PHASE		GEAC		NOTIS		OCLC

Rating of 10 means meets all requirements
5 means marginally adequate
1 means meets none of requirements

99

VANDERBILT UNIVERSITY

Note to Reviewers about Final Ratings Table

The table reports ratings slightly different than those of the individual subcommittees. We have adjusted some of the ratings to reflect information that came to light after the committees had completed their tasks. We have also made some adjustments to reflect our own judgement about features of the various systems. In particular, we have given emphasis to the elegance of a unified bibliographic file as compared with the lesser convenience of linked files for acquisition, circulation and catalog; to the likely superiority of a report generator in supplying management information; and to the length of time required to load the database. Where a committee other than the support committee took account of the likely level of support of the system in assigning a grade to a function, we have changed the committee's score to reflect just the features offered in the given function. These changes in ratings did not change the rank order of the vendors in either the raw or weighted form.

Implementation

UNIVERSITY OF ILLINOIS

IMPLEMENTATION AND OPERATION OF LINKED/INTERFACED SYSTEMS AT THE LIBRARY OF THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Sharon E. Clark

COMPONENTS of the SYSTEM

LCS

The Library of the University of Illinois at Urbana-Champaign (UIUC) has had an automated circulation system since 1978 when the Library Computer System (LCS) was installed. LCS was developed by IBM in the late 1960's for installation first at Ohio State University in 1970, and then for the State University of New York at Albany in 1973. LCS was substantially modified prior to installation at UIUC to expand its potential from a single-institution environment to the broader multi-institutional concept envisioned in Illinois to support resource sharing.

Primarily used for known item searching, circulation and resource sharing among 27 academic libraries in Illinois, each library in LCS maintains it s own data base of short records containing the following information: call number, main entry, title, edition, place of and date of publication, LC card number, language code, format code, and detailed holdings information by copy and location. LCS can be searched by author, author/title, title, and call number (both direct and shelf position). It serves as the master shelflist, the on-order file and only record of current location. LCS is a full inventory-based circulation system, making the combined holdings of 15 million volumes of 28 academic libraries available on over 650 terminals throughout Illinois.

FBR

The second component of the public online catalog is called FBR (Full Bibliographic Record), and is based on the software of WLN (Western Library Network). Operational since August, 1984, the FBR database contains nearly one million complete MARC records representing the combined collections of UIUC and the Riverbend Library System since 1974 when OCLC was adopted for cataloging.

Since it s introduction in 1984, FBR has replaced the card catalog at UIUC, offering all of the traditional card catalog access points, with the exception of the call number (i.e. author, title, subject, series, author-title) as well as being accessible by keyword in title, keyword corporate author, ISBN, ISSN, and through boolean logic. Authority control is provided through a separate and searchable authority file containing the Library of Congress name and subject files as well as authority records created from all items cataloged at UIUC (see appendiices).

While FBR contains records for monographs, serials and audio-visual materials, formats not yet in FBR include: manuscripts, music, maps, sound recordings and newspapers; neither does FBR include records for Chinese, Korean, Japanese, Hebrew, Persian or Armenian languages.

FBR also contains a holdings file which enables a display of all libraries which hold a specific item. Currently, this feature is a useful searching aid in determining which records belong to UIUC and those held by the River Bend Library System. This feature will become increasingly important with future expansion of the Online Catalog on a statewide basis.

In a major software development effort, a "link" was created to enable access to these two separate systems, LCS and FBR, from a single terminal. With ease, the user may move from the Full Bibliographic Record to its corresponding LCS record for call number, location and circulation status information. It is the Link which has enabled the online catalog to transcend its predecessors, placing at users disposal the capacity for bibliographic searching, authority control, circulation status and document delivery all from the same terminal. Further, the Link has not been responsible for any degradation of LCS response time or efficiency. Installation of the Link only involved minimal modification of WLN Software - thereby ensuring full participation and benefit from any future software changes made by WLN. (1)

USER FRIENDLY INTERFACE

In order to circumvent the need for user-proficiency of two different command structures of the LCS and FBR components of the online catalog, a user-friendly interface was developed by Professor C.C. Cheng of the Linguistics department at UIUC. Using natural language, the menu driven interface queries the patron and translates patron responses into the command languages of both systems.

Public reaction to the interface has been exceedingly favorable since its first introduction on an IBM Personal Computer in March 1983. At that time, development was in its first stage and limited to LCS, but with a popular feature: automatic campus searching of all LCS databases. Currently there are approximately 60 IBM PC terminals for public use at UIUC and the interface incorporates both FBR and LCS components of the Online Catalog. At UIUC, the interface resides on cassette tape inside the PC terminal, and is loaded by tape player as these terminals were purchased without disc drives. Loading consumes five minutes but only occurs when a new version is distributed or it is interrupted due to a power failure. (2)

The interface has proven to be a resourceful response to both technical and user concerns. Use of natural language, and prompts greatly facilitates user access to the broad and powerful capabilities of the online catalog, while at the same time reducing the staff burden of training users in the use of separate systems. A positive impact on interlibrary borrowing has been realized as the interface has made this process easier and more direct for the patron. In a study of interlibrary borrowing activity since the first installation of the interface on an IBM PC in 1983, Potter reports a dramatic increase of nearly 3-fold in UIUC interlibrary borrowing from the LCS network of academic libraries.(3)

The technical advantages cannot be overlooked, many of which formed the basis for implementing this approach as opposed to designing the interface for use on the mainframe computer which resides at the University of Illinois computing center at Chicago. Interaction at the local level ensures that only correct and complete messages reach the mainframe. All of the processing is confined within the PC program in each terminal, eliminating interference among terminals. This contributes to maintaining fast interaction with the mainframe. The program also routes as many inquiries as possible to LCS since LCS is cheaper and faster to use than WLN and is able to efficiently handle the majority of inquiries which are of the "known-item" type. Finally, the interface can be modified as desirable to respond to changing local needs, both technical and user-based in a timely fashion.(4)

MAINTENANCE

The cycle of growth for the Online Catalog database involves OCLC as the source of cataloguing, the weekly loading of the OCLC archival tapes and creation of the link between associated FBR and LCS records by University of Illinois programmers. Subsequent maintenance is handled locally in the Library's Automated Systems Unit. The majority of changes to LCS and FBR are accomplished in batch mode. LCS and the link file maintenance use a modified text editor called SUPERWYLBUR, and two data sets: UPDATES and HOLDING. Bibliographic and copy information are changed in the UPDATES file whereas modifications to monographic series and serial holdings are made in the HOLDING file.

The more sophisticated and complex WLN programs are used to maintain the FBR component of the Online Catalog. Several files are available for online access including: the Bibliographic File, the Authority file, the Holdings File and Working File. Using the WLN Input/Edit facility and the Input, Change, and Replace subfiles of the Working File, new database records may be added and existing records modified or deleted. In addition, records added to the database from tape are reviewed. Most of the

FBR maintenance activity of modifying or deleting bibliographic and authority records in the database occurs in the change subfile. Within the Input/Edit facility , a multi-level review process exists as a quality control measure.

The batch program for FBR (BIBVRO) runs twice weekly although it can be run each night upon request. Routine back up of workfile is provided six nights each week and backup of the entire database occurs on a weekly basis.

In an effort to further streamline the maintenance process, several programs have been written and implemented utilizing micro-computers. These programs have had an impact on all segments of maintenance by reducing the labor-intensive process of manual review. For example, in the case of unlinked records, the program is designed to automatically search FBR and LCS for possible links. Successful matches are stored on diskette for batch loading. Only a small number number of non-matches require manual searching and verification and in most cases only on LCS which is fast to use and thus efficient. (5)

ACQUISITIONS

The UIUC Acquisitions/accounting system operates separately on a minicomputer in the Library. Utilization of this minicomputer-based system results in a file of order records which are loaded periodically into LCS. In this way, the LCS module of the Online Catalog provides access to and circulation status not only of short bibliographic records for already catalogued titles but information about titles that have been ordered. Saves may be generated on LCS by patrons for books on-order. As books are received in acquisitions, order records are changed to reflect that items have been received and routed for cataloging. When the books have been cataloged, the OCLC catalog records overlay and replace the order records. At this point, any books which have had saves placed on them via LCS are routed to the appropriate patrons, while the others are sent to one of 35 library locations or central stacks.

This approach has real advantages in terms of future development. Should the library decide to replace the current minicomputer-based acquisitions/accounting system, changes would not be required to the Online Catalog. Rather, changes would be limited to only the programs and file formats used to create the order record for input into the Online Catalog.(6)

SERIAL CHECK-IN

Serial check-in represents another area conducive to linking two

systems in batch mode. At UIUC, serial check-in has been accomplished by combining LCS with micro-computers for check-in. Called "CHECKMAN," this locally developed microcomputer program deceives "fools LCS into behaving as if it were a check-in system" (BP, ital.p.314). Alternatives to CHECKMAN are currently under investigation including an independent check-in system. Such a system might involve microcomputers and periodic loading of information on the most current issue received into the LCS component of the Online Catalog. Using this information to create an updated status line for a serial in the LCS record would keep users informed as to receipt of current issues. In the LCS record, information on unbound issues would be displayed directly above information on bound volumes.

While a new serial check-in system will not be implemented until January, 1987; the search for the best available system for this particular function has been made possible by what we have learned about linking.

The advantage of linking systems by transfer of information on a batch basis is that performance of the Online Catalog has not been compromised and yet current status information on materials in technical processing is provided.

Based on the UIUC experience with linking, other academic libraries using LCS will benefit from the advantages this approach offers, namely:

(1) a library is not tied to one vendor or source

(2) a library can shop for the best available system for each function, and

(3) the interaction among functions is kept to a minimum and the performance of one does not affect the performance of another (7)

This approach to linking is consistent with a recommendation recently made by a committee of librarians representing the LCS network of 27 academic libraries in Illinois. Charged with investigating alternatives for circulation and resource sharing in Illinois, the committee supported the 1) continued use of LCS based on it's cost-effectiveness and proven performance in ability to maintain consistently the high level of current activity and 2) expansion of the FBR component of the Online Catalog to the other LCS libraries for operational use. This committee also recommended that automation of acquisitions and serial check-in be based on local systems but that a common format be developed for transferring status information from the local system into LCS.(8)

FROM IMPLEMENTATION TO OPERATION

A network governance structure evolved to guide the expansion of and development of LCS. In the spring of 1980 the Illinois LCS Organization (ILSCO) was formed. The Policy Council is composed of six elected directors who address matters of policy and monitor resources. The ILCSO Operations Committee includes one representative from each participating institution, as well as non-voting representatives from University of Illinois Administrative Information Systems and Services. This working group addresses technical issues and has coordinated development of specifications for system enhancements, through subcommittees. Policy Council meets monthly while the Operations Committee meets bi-monthly. In addition, all Library Directors of LCS participating institutions meet twice annually.

Just as LCS expansion had its impetus from state funds to form the basis for a computer based library network to aid resource sharing, FBR was supported by Library Construction and Services ACT (LSCA) funds administered by the Illinois State Library to demonstrate the feasibility of a statewide union catalog. A series of committees were formed to guide it's development, including Policy and Implementation, Technical, Steering and User Education.

Administration of the Online Catalog has changed only slightly since the Online Catalog became fully operational. A Library Online Catalog Advisory Committee exists to address issues concerning all of the components, and Technical Committee members deal with technical matters. Two Coordinator positions have been created: one to handle operations and development and the other to coordinate user training (see appendix).

To handle statewide expansion of the Online Catalog, a statewide Online Catalog Advisory Committee was formed to advise on issues related to creating an online union catalog for Illinois.

FUTURE

STATEWIDE UNION ONLINE CATALOG

In 1985, funding was requested and received to expand the data base of this joint catalog to provide an ILLINET Online Union Catalog, based on the OCLC cataloging records from ILLINET member libraries. The ILLINET Online Union Catalog would contain over 3,000,000 titles reflecting over 10,000,000 holdings and would be accessible through terminals in each of the Regional Library Systems, in the Reference and Research Centers, in the LCS member libraries, and through dial-up access. The objectives necessary to meet this goal are 1) provide a feature to limit searching by

Regional Library System or by library; 2) implement the latest version of the Washington Library Network software; and 3) load all available ILLINET OCLC records. This project would take two years to complete and evaluate.

The proposed ILLINET Online Union Catalog would provide full bibliographic access -- author, title, subject, series, etc. -- to all titles cataloged on OCLC by ILLINET member libraries. It would also assist cooperative collection development efforts by providing bibliographic access to cooperative collections cataloged through OCLC.

The creation of an ILLINET Online Union Catalog would greatly enhance resource sharing efforts in Illinois. It would also complement three other efforts currently underway: 1) the various projects to link or "interconnect" the local automated systems at the Regional Library Systems; 2) the development of an IBM PC based interface between the RBLS/UIUC Online Catalog and automated library systems at three Regional Library Systems; and 3) various efforts aimed at improving cooperative collection development efforts.

Several projects allow staff at one Regional Library System to dial into the automated system of another Regional Library System to determine the availability and status of a given item for interlibrary loan. This is a much needed program that promotes library cooperation and resource sharing in the state. However, it requires searching up to 17 other systems with up to three different search languages. Also, it is restricted in that some systems do not yet offer subject access and few offer keyword searching. The ILLINET Online Union Catalog will provide a way to search a master file with holdings records for ILLINET libraries that use OCLC and will reveal which of the Regional Library systems owns the desired item. It will also provide precise information for retrieving the circulation record from the automated system in use at a given Regional Library system.

CIRCULATION SYSTEMS INTERFACING UIUC CATALOG AND PUBLIC

The ongoing interface project would take the above process a step further. This project is developing an interface based on an IBM PC that is connected both to the RBLS/UIUC Online Catalog and to the local automated system in use at each of three Regional Library Systems -- Lincoln Trail Library System, Cumberland Trail Library System, and Lewis and Clark Library System -- Lincoln Trail Library System uses CLSI, Cumberland Trail Library System uses Data Phase, and Lewis and Clark Library System uses Data Research Associates. This project allows an operator to search two systems simultaneously from the same terminal. For example, the operator might be looking for a book with a specific title.

The interface program will ask for the words in that title and then search the local system first. If the title is not found, the interface program can be used interchangeably to search the RBLS/UIUC Online Catalog. The same approach will be taken for other types of searches -- author, subject, series, etc.

While the current project calls for pairing the RBLS/UIUC Online Catalog to only one of the local automated systems at a time, future development might include an extension that would insert an automatic dialing device into the IBM PC permitting access to any of the other systems. Thus, an operator at Cumberland Trail Library System could access the RBLS/UIUC Online Catalog, find a desired title, and retrieve the circulation record from the Data Phase system in use there or from the CLSI system at Lincoln Trail Library System or from the DRA system at Lewis and Clark Library System. This would be done by having the IBM PC store the OCLC number for the desired item, dial into one of the other systems, and search for a record using that OCLC number. If the OCLC control number did not work, the ISBN or some other number could be used. In a true ILLINET Online Union Catalog, the titles owned by each of these three Regional Library Systems would be stored in the union catalog data base and the OCLC number could form the basis for retrieving the circulation record from any other system using OCLC as a source of records for its local system.

OPTICAL DISK CATALOG

Another project sponsored with LSCA funds involves research into creating and demonstrating an optical disk version of the bibliographic data base of the UIUC/River Bend Library System Online Catalog. Using current technology, MARC records on machine readable magnetic tape would be used to create a catalog based on an optical disk that can be read by microcomputer, with searching by key word possible anywhere in the MARC record. This approach promises fast response time and the capacity to store one million MARC records on only two disks. When this project is completed, the optical disk catalog will be demonstrated at the Library of the University of Illinois at Urbana-Champaign and at one of eighteen Regional Library System headquarters in Illinois.

If successful, this project will make feasible the next stage--the preparation of an optical version of the statewide union catalog for distribution throughout Illinois to enhance resource sharing. Even though the mainframe version of the Illinet Union Catalog would be preferred for maintenance, authority control and currency, an optical disk alternative would be highly attractive for locations unable to afford the telecommunications cost of the mainframe-based system. Multi purpose use of the equipment connected with an optical disk catalog to include other databases is also advantageous.

UNIVERSITY OF ILLINOIS

PROJECT EXCEL

Project Excel involves the development of a microcomputer interface to enable Library users, primarily students to effectively access citations to periodical literature contained in the various commercial online bibliographic databases. The interface is being designed to replace the traditional skilled intermediary, thus allowing the end user direct access without a need for either orientation or training. Through this pilot project which will be tested at UIUC Library sites serving a large undergraduate population, users will have enhanced access via public IBM PC terminals equipped with the interface to a major segment of the Library's collection which is not currently available in the online catalog.

The software for this experiment is based upon a microcomputer communications package designed two years ago by William Mischo. Called Illinois Search Aid, it has been used in six Library units to aid librarians in providing mediated online searching services. Through Project Excel, a customized version of the original interface will provide for the formulation of offline interactive search strategies as well as the linking of search results to the UIUC Online catalog for holdings and availability information.

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Operating Environment

The TRLN Libraries

The libraries of the three TRLN institutions, while similar in many respects, also have significant differences. Organizationally, Duke and UNC-CH both include separately administered libraries, which are funded separately from the main academic library system and create their own cataloging records. To provide for particular cataloging requirements of some special collections, UNC-CH also includes cataloging centers that are administered within the main library but establish their own cataloging procedures. However, cataloging policies are coordinated among all participants in TRLN, with the goal of creating a consistent catalog system without sacrificing the flexibility needed to support specialized local collections. Thus, for example, detailed holdings are represented in the same way for everyone, but the system supports several classification systems and subject heading authorities.

The Software Environment

TRLN systems are modular in design, with each module concerned with a specific system function. For example, command interpretation is handled in one module while retrieving records from the data files is handled by another. The modules communicate with each other interactively, using the interprocess communication facility provided by the Tandem operating system. This approach simplifies system maintenance since only the relevant module(s) must be changed when a function changes. In addition, especially in the Tandem environment, the modular approach allows greater flexibility in optimizing system performance.

TRLN software is written primarily in COBOL (the ANSI 1974 standard), with some subroutines written in TAL (Tandem's system language). TAL is used when specific features of the Tandem operating system (GUARDIAN) are needed that are not available through COBOL. All TRLN online systems are coded "NonStop" to take full advantage of Tandem's fault tolerant architecture.

Tandem provides a number of software products in addition to the operating system and programming languages. Since most of these are aimed at typical business applications, TRLN has been unable to use them effectively in the online catalog. Instead, the online catalog has been implemented using only the more basic tools, such as the ENSCRIBE file management system. Acquisitions/serials and circulation are more like traditional

data processing applications, and it is anticipated that many of Tandem's other software products will be appropriate and that their use will speed up the software development process. In particular, the ENFORM report generator and the PATHWAY terminal and screen management system are expected to be valuable in the ongoing development effort.

The Hardware Environment

The TRLN software is designed to operate on a distributed network of Tandem computers (either NonStop II or TXP), with separate installations at each institution supporting the online catalog system for that institution. This approach allows each institution to operate the particular configuration that best suits its needs and budget. The three systems will be linked, using Tandem's EXPAND software to provide networking services. However, until Duke and NCSU are able to install their own systems, the computer installation at UNC-CH will provide service for all three installations. The UNC-CH computer also supports the TRLN development effort.

UNIVERSITY OF NORTH CAROLINA

DEVELOPMENT ACTIVITIES: FIVE YEAR PROJECTION

Notes:

Functions are shown during years that development work is in progress. The status indicates the stage of development in progress or completed at the end of the year.

Since the additional staff is not available until fiscal year , FY1986/1987, and the schedules are quite general for later years, it is difficult to identify the effect of the additional staff. Examples of the effect on major functions are:

- the circulation functions will be ready by the end of 1987 instead of near the end of 1988
- the authority control system will be completed by the end of 1989 rather than near the end of 1992
- the serials/acquisitions system will be well into the coding stage at the end of 1989. Without additional staff, coding will not have begun on these functions by then.

Option 1: Existing staff

1985

Functions under development

Authority control: names (functional design in progress)

OCLC Link (functional design and implementation design complete, coding in progress)

Searching multiple TRLN catalogs simultaneously (implementation design complete, coding in progress)

Circulation (functional design in progress)

Serials/Acquisitions (functional design in progress)

Option 2: Additional staff

1985

Functions under development

Authority control: names (functional design in progress)

OCLC Link (functional design and implementation design complete, coding in progress)

Searching multiple TRLN catalogs simultaneously (implementation design complete, coding in progress)

Circulation (functional design in progress)

Serials/Acquisitions (functional design in progress)

June 1985

UNIVERSITY OF NORTH CAROLINA

Functions into full operation

**Basic searching, database maintenance, and general support functions (BIS-1)

**Subject/Call number searching

Alternative terminal support

1986

New functions begun

Authority control: subjects (functional design in progress)

Authority control: using cross references for access (functional design in progress)

Functions under development

Authority control: names (functional design complete)

OCLC Link (coding in progress)

Circulation (functional design and implementation design complete)

Serials/Acquisitions (functional design in progress)

Functions into full operation

**Searching multiple TRLN catalogs simultaneously

Functions into full operation

**Basic searching, database maintenance, and general support functions (BIS-1)

**Subject/Call number searching

Alternative terminal support

1986

New functions begun

Authority control: subjects (functional design in progress)

Authority control: using cross references for access (functional design in progress)

Functions under development

Authority control: names (functional design complete)

Circulation (functional design and implementation design complete)

Serials/Acquisitions (functional design in progress)

Functions into full operation

**Searching multiple TRLN catalogs simultaneously

**OCLC Link

UNIVERSITY OF NORTH CAROLINA

1987

New functions begun

Enhanced searching
(functional design
in progress)

Functions under development

Authority control
(functional design
complete, implementation
design in progress)

Circulation
(coding in progress)

Serials/Acquisitions
(functional design
complete)

Functions into full operation

**OCLC Link

1987

New functions begun

Enhanced searching
(functional design
in progress)

Functions under development

Authority control
(functional design
complete, implementation
design in progress)

Serials/Acquisitions
(functional design
complete)

Functions into full operation

**Circulation

1988

New functions begun

Management Information
(functional design
in progress)

Functions under development

Authority control
(implementation design
complete, coding in
progress)

Enhanced searching
(functional design
complete, implementation
design in progress)

Serials/Acquisitions
(implementation design
complete)

1988

New functions begun

Management Information
(functional design
in progress)

Functions under development

Authority control
(implementation design
complete, coding in
progress)

Enhanced searching
(functional design and
implementation design
complete)

Serials/Acquisitions
(implementation design
complete, coding in
progress)

Functions into full operation

**Circulation

1989

Functions under development

Authority control
(coding in progress)

Enhanced searching
(implementation design
complete)

Management Information
(implementation design
complete)

Serials/Acquisitions
(implementation design
complete)

Functions into full operation

Functions into full operation

1989

Functions under development

Enhanced searching
(implementation design
complete)

Management Information
(implementation design
complete)

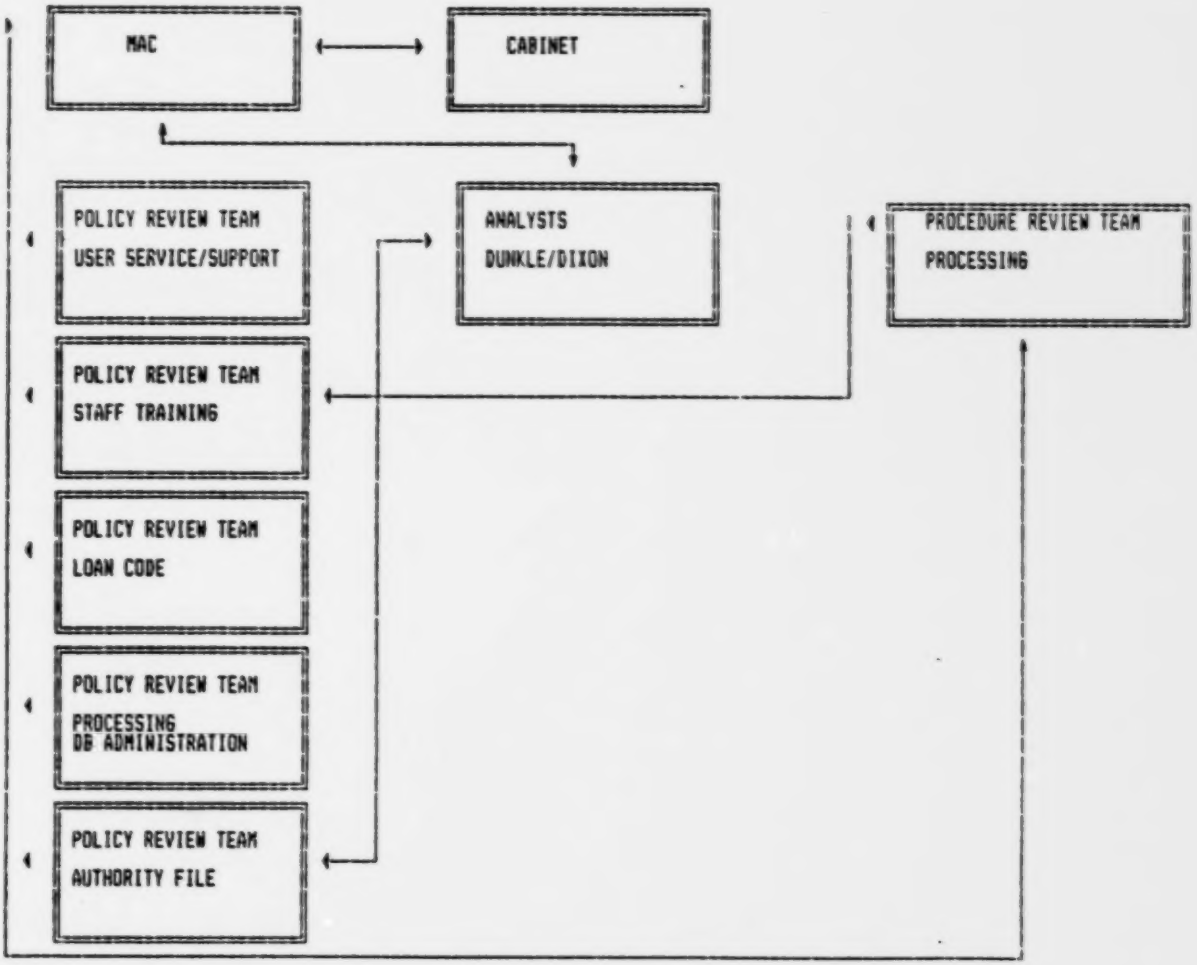
Serials/Acquisitions
(coding in progress

Functions into full operation

**Authority control

COMMITTEE STRUCTURE

As the Library moves to install NOTIS the process of defining the various table files will require that we examine our policies and procedures. It is also the case that the introduction of a new tool provides an opportunity to review policies, procedures, and workflow. The structure outlined below is the same as that in the memo of March 13, save for a reduction in the number of Procedure Review Teams. These committees, along with MAC will advise the Library administration. Final decisions will be made by Cabinet.



POLICY REVIEW TEAM

PROCESSING - DATABASE ADMINISTRATION

This committee is charged to review and recommend policies governing the processing of Library material. Processing includes the acqusition of material, the creation of bibliographic records, the creation of holdings records, the physical preparation of material, maintenance of the online files, maintenance of card files, and quality control. Issues that should be addressed include, but are not limited to, the following:

1. The bibliographic and holdings record structure
2. The content of bibliographic and holdings records
3. The content of the MIRLYN OPAC. What "non-standard" files should be included in the OPAC and should they be added in a particular order, all at onece, or in some other way. Included in this category are materials such as slides, dissertations, etc.
4. What should happen to existing card catalogs
5. Should maintenance be performed on records in the card catalogs or should such work be performed on MIRLYN
6. Should maintenance of machine-readable records be performed on RLIN or MIRLYN
7. Should the quality control program now in effect be used for MIRLYN as it now stands or are modifications required
8. Should the procedures for reviewing the Geac record structure be used with MIRLYN or are modifications needed
9. Whether indicators should be edited
10. Whether headings shoul be flipped to AACR2
11. Cataloging policy - for example, should bibliographic treatment be standardized for the same bibliographic enties? That is should we use a single call number for all copies of an item regardless of location? Should monographic series be treated the same regardless of location? Should mongraphic series cataloged as separates be checked in at the serials record? At what point should authority control be applied to entries?
12. Acquisitions policy - for example, were should pre-order searching take place? Who should assign vendors?
13. Serials policy

The committee should produce a final report that contains detailed and explicit recommendations and draft polcies.

Note that the specific charge to this committee may be modified depending upon the content of the final reports of the first MIRLYN committee

DEADLINE: AUGUST 1, 1986

POLICY REVIEW TEAM

CIRCULATION

This committee is charged to review and recommend policies governing the circulation of Library material. Circulation includes fine rates, holds policies, loan periods, and patron categories. Issues that should be addressed include, but are not limited to, the following:

1. Should the fine rate be standardized throughout the system
2. Should the hold policy be standardized throughout the system
3. Should loan periods be standardized
4. Who can register patrons
5. The number of notices and the type of notices sent to users
6. The wording of notices
7. Who can assign privileges to patron categories
8. What policies and procedures should be used to handle material for which there is no machine-readable record

The committee should produce a final report that contains detailed and explicit recommendations and draft polcies.

Note that the specific charge to this committee may be modified depending upon the content of the final reports of the first MIRLYN committee

DEADLINE: AUGUST 1, 1986

POLICY REVIEW TEAM

AUTHORITY FILES

This committee is charged to review and recommend policies covering the creation and maintenance of a machine-readable authority file. Issues that should be addressed include, but are not limited to, the following:

1. How to build a machine-readable authority file
2. Whether headings should be flipped to AACR2
3. The specific source authority files that will be used
4. What unit or units will be authorized to maintain the authority file
5. How the authority files will be updated

The committee should produce a final report that contains detailed and explicit recommendations and draft polcies.

Note that the specific charge to this committee may be modified depending upon the content of the final reports of the first MIRLYN committee

DEADLINE: OCTOBER 1, 1986

POLICY REVIEW TEAM

USER SERVICE/SUPPORT

This committee is charged to review and recommend policies concerning the delivery of service to users of MIRLYN. This includes educating users in the use of MIRLYN, recommending the format of user documentation, recommending the content of user documentation, recommending the structure that will be used to deliver service to MIRLYN users, both those in the Library and those at remote locations, such as offices, dorms, laboratories, and homes. Issues that should be addressed include, but are not limited to, the following:

1. What user documentation will be required
2. What unit or units should produce and maintain the documentation
3. How should the documentation be laved out
4. What structure should be used to deliver services to local and remote users

The committee should produce a final report that contains detailed and explicit recommendations and draft polcies.

Note that the specific charge to this committee may be modified depending upon the content of the final reports of the first MIRLYN committee

DEADLINE: DECEMBER 1, 1986

POLICY REVIEW TEAM

STAFF TRAINING

This committee is charged to review and recommend policies concerning the structure and content of staff training. Issues that should be addressed include, but are not limited to, the following:

1. Who should deliver staff training
2. What should be the content of staff training
3. How should training be delivered
4. How should on-going training be provided
5. What documentation will be required
6. How should the documentation be layed out
7. Who should produce and maintain the documentation

The committee should produce a final report that contains detailed and explicit recommendations and draft polcies.

Note that the specific charge to this committee may be modified depending upon the content of the final reports of the first MIRLYN committee

DEADLINE: SEPTEMBER 1, 1986

PROCEDURE REVEIW TEAM

PROCESSING

This committee is charged to review and recommend a new "blueprint" for the structure of processing material within the University of Michigan Libraries. Processing includes the acqusition of material, the creation of bibliographic records, the creation of holdings records, the physical preparation of material, maintenance of the online files, maintenance of card files, and quality control. The committee should review existing processing procedures and workflow across all units and should recommend how the introduction of MIRLYN will enable the Library to reconfigur processing. The committee should produce a detailed report that identifies processing tasks and the unit(s) in which they should be performed.

Note that the specific charge to this committee may be modified depending upon the content of the final reports of the first MIRLYN committee

DEADLINE: MARCH 1, 1987

The analysts (Dunkle and Dixon) would have three broad responsibilities. First, they would be responsible for completing the mechanical tasks that are required for NOTIS to operate. Second, they would be responsible for informing the Policy Review Teams and the Procedure Review Team of the information they require to install NOTIS. That is, they will need to specify the information the various teams will need to provide. And third, the analysts would be available as technical consultants.

In addition to the Library wide issues contained in the committee charges, a subset of issues will need to be considered at the divisional and unit level. Decisions that fall into this category include:

1. distribution of terminals
2. distribution of printers
3. distribution of barcode readers
4. definition of privilege levels for staff within the unit (consistent with Library wide policies)
5. revision of unit policies, procedures, and workflow

Operation

- Computer Center Relations
- System Description
- Use Statistics

DRAFT
ilsulcc.wof

March 27, 1986

PROPOSED
SERVICE AGREEMENT
BETWEEN THE UNIVERSITY LIBRARY SYSTEM AND THE COMPUTING CENTER
(version 4)

1.0 OVERVIEW

The University Libraries, along with the Law Library, the Kresge Business Library and the Flint Library, intends to replace its existing stand-alone automated systems with an integrated software package. The package will support (1) an online catalog, (2) acquisitions, (3) record management, (4) circulation, and (5) serials control. The system will run on an IBM 4381/2. The initial implementation of of MIRLYN (MIchigan Research LibrarY Network) will support 575 concurrent users and a database of 4.75 million bibliographic records. Acess to MIRLYN will be provided through a network of 300 terminals and through UMnet.

The Library will own the hardware, software, and data for MIRLYN and retains exclusive right to the use of all three. The Library desires, by this agreement, to contract with the Computing Center for operation of the system.

1.1 Purpose

This agreement is intended to define (1) the services that will be provided by the Computing Center, (2) the responsibilities of both the Library and the Computing Center, (3) standards of performance, and (4) procedures for the resolution of performance problems.

The successful installation and operation of MIRLYN will require a cooperative partnership among the Library, the Computing Center, and the vendors . This agreement provides the foundation for such a cooperative effort.

2.0 UNIVERSITY LIBRARY RESPONSIBILITIES

The Univesity Library shall:

2.1 Purchase the central site hardware (processor, console, disk drives, tape drives, and printer) necessary to support MIRLYN and will pay the maintenance on the equipment.

2.2 Purchase, install, and maintain the terminal devices, terminal printers, and barcode readers used with the MIRLYN system.

2.3 Purchase the necessary communications hardware to connect MIRLYN to UMnet and pay the maintenance on the equipment.

2.4 Obtain the license for the NOTIS software and conversion programs necessary to run the NOTIS system and load the Library's machne-readable data.

2.5 Pay all charges for the installation and maintenance of the NOTIS software.

2.6 Provide the application programmer(s) necessary to install and maintain the NOTIS software.

2.7 Provide the necessary supplies for operation of the system including, but not limited to, paper, forms, and magnetic tapes.

2.8 Pay the installation, license, and annual charges for the system software needed to run NOTIS.

2.9 Pay the installation, license, and annual charges for the SAS Insititute report writing software.

2.10 Provide for the training of Library staff for the installation and operation of the NOTIS system, including handling daily consulting regarding use of the system.

3.0 COMPUTING CENTER RESPONSIBILITIES

The Computing Center shall provide the following services:

3.1 Systems Programming

The Computing Center shall provide a systems programmer and shall be responsible for:

1. installation of the central site hardware
2. selection and installation of the operating system
3. installation of the applications packages
4. maintenance of the operating system
5. troubleshooting hardware and software problems
6. in conjunction with the hardware maintenance vendor, maintain the hardware

3.1.1 Staffing

Staffing for the first nine months of the project will be at 1 FTE. Thereafter .5 FTE will be allocated to the project.

3.1.1.1 Charges

Charges shall be negotiated annually.

3.2 Operations

The Computing Center shall provide computer operators and shall be responsible for the following tasks according to schedules established by the Library.

1. bringing the system up and down
2. backing up files
3. running batch jobs
4. distributing printed output
5. maintaining an operations log
6. mounting tapes

3.2.1 Staffing

1 FTE operator will be assigned to the project.

3.2.2 Costs

Charges shall be negotiated annually.

3.3 Network Support

The Computing Center shall define how to connect MIRLYN to UMnet and shall assist in the maintenance of the connections

3.4 Other Services

3.4.1 The Computing Center shall obtain the licenses for the system software and the SAS Institute software.

3.4.2 The Computing Center shall house the MIRLYN backup tapes.

2.4.3 The Computing Center shall arrange for maintenance for the central site hardware.

4.0 PERFORMANCE MEASURES

MIRLYN will play a central and critical role in the Libraries abilities to meet its committments to the University community. The online catalog is the principal product of the Library and if it is not available it is the equivalent of closing the Library. Behind the scenes, steady productivity is necessary in order to maintain the efficient catalog creation and maintenance that form the foundation of Library activities. Excellent system reliability and response time are necessary in order to effectively maintain productive workflow.

4.1 System Availability

The online catalog must be available 24 hours a day, save for scheduled maintenance periods.

The acquisitions, serials control, circulation, authority control, and record maintenance systems must be available from 0700 to 0200 of the following day seven days a week.

The Libraries will regularly supply the Computing Center with a detailed calendar that shows exceptions in which service is not required due to holidays.

The availability schedule may only be changed by the Library.

4.2 Response Time

4.2.1 Definition

Response time is defined as the time period between the moment an ENTER command is sent and the moment the first character in response to that command is displayed on the terminal.

4.2.2 Performance Measure

Response time for 95% of the responses must average no more than two seconds for all transactions except keyword and boolean searches

Response time for any individual transaction, except keyword and boolean searches, must not exceed five seconds

Response time for 95% of the responses for keyword and boolean searches must average no more than five seconds

Response time for any individual keyword or boolean searche must not exceed 10 seconds

4.2.3 Measurement and Reporting.

The Libraries and the Computing Center will work together to use appropriate measuring devices and record keeping techniques to monitor response time performance.

4.3 Downtime

3.3.1 Definitions

TOTAL SYSTEM DOWNTIME = sum of downtime factors divided by the sum of daily operational hours

DOWNTIME FACTOR = downtime hours multiplied by the downtime coefficient as defined in section 3.3.2 of this section

DAILY OPERATIONAL HOURS = those hours (1) that a specific subsystem is scheduled to be available and (2) the system is scheduled to run overnight batch jobs. Regularly scheduled preventive maintenance is excluded from the calculation of daily operational hours.

DOWNTIME HOURS = that period of time during which various parts of the system are unusable due to hardware or software malfunction or failure. Downtime hours for each incident shall be measured during the performance period as the time between the time the University of Michigan Libraries and Computing Center makes a bona fide attempt to contact the maintenance vendor and the time the system is returned to the University of Michigan Libraries in proper operating condition, provided that all hardware that the maintenance vendor determines necessary to test the hardware are made available to the maintenance vendor at his request. If initial hardware or software malfunction or failure occurs during unattended overnight batch processing, calculation of downtime hours may commence one hour before discovery of the malfunction or failure

During a period of downtime, the University of Michigan Libraries may use operable hardware/software when such action does not interfere with maintenance of the inoperable hardware/software

4.3.2 Downtime Coefficients

4.3.2.1	Systems Software	
4.3.2.1.1	operating system (including DBMS	1.00
4.3.2.1.2	system utilities	0.50
4.3.2.2	Hardware	
4.3.2.2.1	Central processing unit	1.00
4.3.2.2.2	disks, if system is not operational (i.e. if data is not available)	1.00
4.3.2.2.3	disks, if system is operational and all data is available - 24 hour grace period	0.10
4.3.2.2.4	tape drives, if alternative backup is available - 24 hour grace period	0.10
4.3.2.2.5	tape drives, if no alternative backup is available	1.00
4.3.2.2.6	system printer	0.75
4.3.2.2.7	other hardware failures or malfunctions	0.10

4.3.3 Performance Measures

cDowntime ofentral site and communications components of the system must not exceed 2% during a 30 dav period.

4.3.4 Measurement and Reporting

The Libraries and the Computing Center will work together to use appropriate measuring devices and record keeping techniques to monitor downtimee.

4.4 Problem Resolution

When system performance does not meet the standards defined above

the Libraries and Computing Center will jointly work to (1) identify the cause of the problem and (2) work to resolve the problem.

5.0 SECURITY

The Computing Center will take all reasonable measures to insure the integrity and security of MIRLYN programs and data. The Computing Center further warrants that all data and programs installed on the system will be maintained as confidential by the Computing Center. No data or programs may be transmitted to a third party by the Computing Center without the written permission of the Libraries.

6.0 ACCOUNTABILITY

The Computing Center warrants that all reasonable measures within the resources of the Computing Center shall be taken to insure the availability and integrity of the MIRLYN system. In the event of temporary staff shortages, system failures, or other unforseen problems, all appropriate steps shall be taken by the Computing Center to maintain operation of the system. The Computing Center assumes responsibility for any errors that may be made by Computing Center staff assigned to the system and will effect correction of any such errors.

7.0 RENEWAL, MODIFICATION, OR TERMINATION OF AGREEMENT

This agreement shall be renewed on an annual basis, but may be modified, amended, or terminated at any time by mutual agreement of the Director of the Computing Center and the Director of the Libraries.

8.0 PROJECT MANAGEMENT

The University Library and the Computing Center shall each designate an individual to serve as project manager for each organization. These two individuals shall have responsibility for implmementting this agreement.

THIS AGREEMENT IS EXECUTED BY:

THE LIBRARIES

THE COMPUTING CENTER

AGREEMENT RELATIVE TO RESPONSIBILITIES TO IBM 4361/LIBRARY

This document records the general agreement between the Heard Library and the Computer Center relative to the responsibility and funding of the IBM 4361/NOTIS Computer System

I. RESPONSIBILITY

A. Jean & Alexander Heard Library

1. Provide funding for the hardware, software, maintenance, operations, supplies and other support as needed for the IBM 4361

2. Scheduling

   a. Availability of IBM 4361 system to users

   b. Special jobs session by Library personnel or VUCC Operators via a RUNBOOK

3. Special forms will be ordered initially by the Library through the Computer Center in order that the Computer Center will be able to keep track of these supplies.

4. NOTIS software and all other applications software ordering will be responsibility of the Library

5. Inform Computer Center of all changes (hardware/ software) to be made to the IBM 4361

B. University Computer Center

1. House the IBM 4361

2. Arrange for initial installation of the hardware and software and bring the system into a full operational status

3. Arrange for continued maintenance of the hardware and software

4. Provide operator coverage as needed and scheduled by the Library

II. BUDGET

The Computer Center will establish a budget to track all expenditures directly associated with the operation of the Library IBM 4361 Computer System. This budget will be a fiscal year end zero balance budget with all expenditures being paid by the Library. The following costs are associated with this budget.

A. Staff Costs

1. Operator Costs: initially to be charged at the rate of 1/4 of an operator for 2-1/2 shifts including Saturday and Sunday at the rate of $12,000 per year salary and benefits:

   12,000/4x2.5=$7,500/year

   This is to be re-evaluated when the Library system goes on-line in the Fall.

2. Continuing System Support: Estimated that this requirement will be equal to 1/4 of a system person per year, cost will equal $8,000 per year.

B. Maintenance Hardware and Software

1. The Computer Center will contract with IBM and other vendors for annual maintenance contract. These direct charges are to be billed to the Library.

2. Items not under maintenance contract will be maintained by the Computer Center on a per-call basis with the vendor or by the Computer Center on a time/material method estimated not to exceed $5,000/year.

C. Supply Charges

1. Ribbons, special forms, etc.

D. Other Charges

1. Physical space and facility charge based on Plant Operation square footage charges.

2. Installation Charges.

VANDERBILT UNIVERSITY

Agreement Relative to Responsibilities to IBM 4361/Library

III. SPECIAL REQUIREMENT

It is required that Vanderbilt configure the NOTIS system to meet our requirements and to install the software onto the IBM 4361. It is estimated that this is a three to six man month effort. The Computer Center will provide the personnel to do this task and will charge the Library at the rate of $25 per hour. This charge will be in addition to the system support referred to in Section II.A.2.

Approved:	James F. Petznick	Flo Wilson
	Vanderbilt University Computer Center	Jean and Alexander Heard Library
Date:	17 Jan 85	18 Mar 1985

NEW YORK UNIVERSITY LIBRARIES
GEAC ONLINE CATALOG

This document contains a general description of NYU's online catalog, Bobcat. The catalog is manufactured and sold by Geac Computers International, a computer company based in Markham, Ontario. NYU helped Geac to design the catalog and has continued to work with Geac in improving and developing the catalog further.

When the catalog was in design one of the primary goals was to create a tool that would be at the same time easy to use and powerful. Thus it would be able to serve a wide variety of libraries ranging from small to large and including both public and academic. The positive reactions of library patrons in many Geac catalog installations attest to the successful attainment of this goal.

The catalog's popularity and usefulness to both staff and patrons have increased over time. In order to continue to add enhancements such as dial in access NYU has purchased a new, more powerful computer to which the catalog will be transferred shortly.

A description of the NYU catalog follows:

CONTENTS OF CATALOG

Bobcat contains nearly 450,000 records. Most are monographs but many serials, scores, sound recordings, and manuscript and archive records are also included. In the near future records for machine-readable data files will also be added.

Serial holdings displayed in Bobcat consist of the information contained in the Summary Holdings Statement (MARC field 930) in the RLIN record. Coded notes have been "exploded," into understandably worded phrases.

About 250,000 of Bobcat's records were converted from OCLC to RLIN format when NYU joined RLG and ceased to utilize OCLC. As of the official "opening" date, September 1983, the Bobcat data base consisted of these OCLC records and about 50,000 records created on RLIN. After an initial year of experimentation and stabilization the card catalog was closed in June 1984 and filing of new cards ceased with the exception of non-roman cards and records from other NYU libraries. Retrospective conversion, using Carollton Press's REMARC system, has begun and these records will be added to Bobcat.

LOCATION AND PLACEMENT OF TERMINALS

Terminals are supplied by Geac Computers; they are polled, block-mode terminals with either amber or green phosphor screens. There are two types of terminals in use: CRT plus simple typewriter-like keyboard terminals for patron use; CRT plus full ALA character keyboard set for staff. Bobcat terminals are located on every floor of Bobst Library with a large cluster of thirty in the main floor catalog area adjacent to the card catalog. There are also terminals hooked by

2400 baud dedicated phone lines in 5 remote locations and 2 locations utilize dial in access to the catalog as needed. At present over 100 terminals are operational on the system. The exact number installed in each catalog area was determined by a queuing study.

In Bobst Library most terminals are in "stand-up" mode, i.e., on high tables. We have noted that patrons do take the high stools used by staff working at the card catalog; they almost always prefer to sit while searching, so that we will be purchasing additional high stools for some of the stand-up terminals. Most terminals on different floors in the stack area are stand-up only. There are terminals available for disabled students as well.

The availability of Bobcat terminals on all floors of the library and at each of the reference centers has had a positive impact on patrons and reference staff. For the first time they have access to the holdings of the library at many different physical locations. The catalog makes it possible for patrons to search for additional materials without having to return to the main floor catalog area. It allows staff to teach proper catalog use in many different locations, thus diversifying the responsibility which formerly rested mainly on the general reference department staff. The presence of terminals adjacent to their offices also makes the collection development activities of reference staff easier.

SEARCHING

The catalog, which is a menu-driven system, leads users through a search one screen at a time. Each search screen contains examples of how a search should be typed as well as brief information pertaining to the specific type of search. Help screens, which are tailored to amplify information given on the initial search screens, are clearly written and include additional examples.

Types of searches

1) String searches by Author (AUT), Title (TIL), or Subject (SUB.) SUB searches use standard Library of Congress subject headings and local headings (if desired.)

2) Keyword (KEY) searches for Authors (AUTK), Title (TILK) or Subject (SUBK). All significant words included with the exception of stoplisted words.

3) Number (NUM) searches for LC card number (LCN), Call number (CAL), ISBN, ISSN, or ISRN (ISN), Government document number (GOV), or Music publisher number (PUB).

4) Linked Author-Title (A-T) search on a 4-4 key, i.e., first 4 letters of author's last name, first 4 letters of first word of title. This may be expanded to a 10-10 key.

5) Boolean search - utilizes via the author, title, and subject keyword indexes. Can do adjacency searching as well. Installed presently on twenty-one terminals at reference desks and staff areas in each of the libraries.

Both Keyword and Number searches are 2-level type searches, i.e., patron first asks to do keyword search or number search and then selects the kind of keyword or number search.

Title index entries do not omit non-filing characters on the basis of the second indicator; a stoplist is used instead. This was done for 2 reasons: many of our older records created on OCLC do not include that filing indicator, and often patrons do not recognize articles which begin titles (particularly in foreign language titles.) The stoplist contains very few words (basically The, An, etc.) so that foreign language titles which begin with articles such as "Die," "La," "Los" are filed under those articles. We plan to utilize a Geac program to insert proper indicators into records which lack them. We can then cease using stoplists for string indexes.

COMMANDS

Commands available at each point in the searching process are presented in a menu at the bottom of the screen. This menu contains from 2-8 commands although in fact additional commands might be valid at that time. It was felt that more menu choices would cut down on screen space for actual data and would also tend to confuse or overwhelm patrons.

Five function keys are activated on Bobcat terminals and facilitate use of the system: Help, Advanced Help, Start Over, Previous Screen, End. Help invokes whichever help screen is appropriate to what the patron is involved in at that moment. Advanced Help includes information on command chaining or stacking, a speedier way of searching the catalog. Start Over returns the user to the search type selection menu. Previous Screen presents from 6-10 physical screens showing exactly what had been displayed before (although results from keyword searches cannot be retained in memory). This function key is particularly useful to reference staff as they try to help explain the catalog's operation to patrons. End actually terminates the whole process and recalls the Introductory screen so that the is ready for the next patron.

An interesting phenomenon, and one which attests to the ease of use of the catalog, is the fact that many patrons do not end their searches but instead walk away from the terminal. The fact that the next person can walk up, follow the instructions on the bottom of the screen and not have to start right from the Introductory screen shows that the catalog is self-explanatory. In studies done by NYU in 1984 the majority patrons stated that they learned how to use the catalog by themselves, i.e., by following instructions on the screen.

DISPLAYS

Great care was taken during the design stages to ensure that screens would not be too "cluttered" or verbose, and that jargon would not be used. The amount of data on each screen is generally in keeping with accepted formulae which state that only about 15% of the screen should contain information. Patrons have mentioned that the catalog is very easy to understand, so apparently efforts to devise simple, easily understandable screens were successful.

There are 4 record displays available to patrons; these vary in purpose from very brief for identification purposes to full bibliographic information for scholarly use.

Index displays contain one line per record from a section of the index which matches the user's search.

Citation displays present those entries associated with a particular index node, e.g., all of an author's works;

Brief display (BRF) - contains author, title, edition (if any) and imprint (full 260 field). Each field has a left-justified, upper case, lower intensity label. In addition, location, call number and copy number are included for every copy of the title. The location code consists of 6 or fewer characters, in upper case, the first of which represents the library where the item is located while the remaining letters tell where in that library the title is located. For example, BSTACK means the book is is Bobst Library in the main stacks. Status information is not yet included in the BRF display though this is planned for the future.

Full display (FUL) resembles an LC card in fullness of data, but has separate paragraphs which are labelled as in the Brief display. For example, tracings are grouped in paragraphs with labels such as "OTHER AUTHORS," "SUBJECTS," or "OTHER TITLES." The tracings are not preceded by numerals as on LC cards but are separated by a space-asterisk-space. Location information is not included on the FUL display; patrons who want this information must return to the BRF screen. This was done to prevent a large proportion of records from flowing onto a second screen.

In addition to the four displays which the public see there is a fully tagged MARC display for staff use.

What is displayed in response to a search depends upon the kind of search done and what is retrieved. When a search retrieves an index entry which has only one record associated with it, that record is immediately displayed in BRF format. When more than one index node is retrieved, an IND(ex) list results. When one index node with more than one record is retrieved, then the patron is shown a CIT(ation) list.

AIDS TO USERS

If a searcher types an "incorrect" or unrecognizable command the system "answers" with a clearly worded, non-judgmental error message. The user can press the HELP key to get explanatory information. If the same mistake is made three times, at the third occurrence the user "strikes out," and the system automatically presents the help screen. There is also an Advanced Help screen explaining the use of command chaining, a speedier way of searching than the menu-driven approach.

If a search finds no match, the user is given several helpful pieces of information or hints: the search as input is redisplayed on the screen, a message states that the search found no matches, and a portion of the index is displayed beginning with those entries which alphabetically immediately precede and follow the search as entered.

The patron can thus check for typographical errors, and/or scan the index display for other possibly useful entries. The index display often serves as a visual clue that something was mistyped, e.g., the display shows words beginning with the letter K rather than L.

Bobcat Bulletins which contain general information about the catalog are widely available. They include information on the catalog's holdings, a list of commands, library location abbreviations (along with full location names) and helpful hints. These Bulletins are on 2 sided, 8 1/2"x11" gold paper topped by the Bobcat logo, a grinning Bobcat in an NYU tee shirt. The Bulletins are pasted under plastic sheets on the tables next to the terminals.

There is a series of Bobcat Bulletins for staff (on green paper) which is not circulated to the public.

To inform users of the necessity of consulting the card catalog plastic strips with white letters on a black background have been pasted above and below terminal screens. They bear the legend "Bobcat does not have it all."[above screen] "Check the card catalog too."[below screen] or "Bobcat contains only part of our holdings."[above screen] "Please check the card catalog."[below screen] (Unfortunately, patrons seem to ignore these signs and often assume that Bobcat is complete.)

FEATURES TO BE IMPLEMENTED IN FUTURE

There are still a number of enhancements to the online catalog which are not yet implemented. They will be installed as Geac makes them available or as NYU is ready:

1. Authority control which is already available will be implemented soon. This will aid enormously in bringing together the separate files caused by AACR1 versus AACR2 forms of heading, in correcting typographical errors, and in enhancing all future changes to catalog headings. It will also enable patrons to automatically see the proper form of heading without forcing them to retype their search.

2. Printing from the catalog is available; NYU is in the process of deciding whether to use individual printers at terminals for screen dumps or one high-speed printer at a central location (and a charge for printouts.) We also hope to incorporate a save file to allow users to retain records and sort them in any order before printing.

3. Scanning through indexes and citation lists should be enhanced. Although one can scan FOR(ward) or BAC(kward) through such lists now, it is not possible to jump a specified number of entries in either direction.

5. Displaying records for a specific location is not posssible at present. Searches currently call up matching holdings from the union data base. This will be corrected in the next release of the software as well as on the 9000 system.

6. Dial access to Bobcat will be implemented with the move to the 9000 system. This will be on an experimental basis at first with only a few ports.

7. On order and in process information will be incorporated into Bobcat to notify staff and patrons of materials which have not yet been cataloged and added to the permanent data base.

8. Status information will appear as part of the BRF display when the circulation and online catalog data bases are matched against each other.

9. Boolean searching will be expanded to all terminals rather than limited to reference desks. NYU staff have sent Geac a set of revised screens and suggestions for improvements to Boolean searching.

10. Reserve reading information will be listed in the online catalog rather than in printed lists.

aut352 (based on aut114)
5.24.84 revised 5.24.85 revised 4.10.86
g.persky

NYU online catalog statistics

COMPLETE TRANSACTION STATISTICS 85-11-19 15:29:54 PAGE 135

TRANSACTION DESCRIPTION		NUMBER	PERCENT SEARCHES	PERCENT OF TOTAL
TITLE SEARCH:	TIL	861	28.7	6.6
AUTHOR SEARCH:	AUT	937	31.2	7.2
AUTHOR-TITLE SEARCH:	A-T	191	6.4	1.5
SUBJECT SEARCH:	SUB	739	24.6	5.7
TITLE KEYWORD SEARCH:	TILK	62	2.1	0.5
AUTHOR KEYWORD SEARCH:	AUTK	6	0.2	0.0
SUBJECT KEYWORD SEARCH:	SUBK	76	2.5	0.6
BOOLEAN SEARCH:	BOL	25	0.8	0.2
ISN NUMBER SEARCH:	ISN	4	0.1	0.0
LCN NUMBER SEARCH:	LCN	0	0.0	0.0
GOV NUMBER SEARCH:	GOV	0	0.0	0.0
CSN NUMBER SEARCH:	CSN	2	0.1	0.0
PUB NUMBER SEARCH:	PUB	0	0.0	0.0
CALL NUMBER SEARCH:	CAL	96	3.2	0.7
TOTAL SEARCHES, ALL TERMINALS:		2,999		
NUMBER SEARCH:	NUM	100		0.8
KEYWORD SEARCH:	KEY	153		1.2
SEARCH ALL AGENCIES:	ALL	3		0.0
SEARCH THIS AGENCY ONLY:	LIB	0		0.0
REQUEST FOR HELP:	HLP	93		0.7
REQUEST FOR ADVANCED HELP:	AVH	82		0.6
REQUEST FOR BRIEF DISPLAY:	BRF	219		1.7
REQUEST FOR FULL DISPLAY:	FUL	870		6.7
REQUEST FOR INDEX DISPLAY:	IND	1,150		8.8
REQUEST FOR CITATION DISPLAY:	CIT	146		1.1
MOVE FORWARD IN DISPLAY:	FOR	3,152		24.2
MOVE BACKWARD IN DISPLAY:	BAC	889		6.8
RETURN TO PREVIOUS SCREEN:	PREV	743		5.7
RETURN TO CAT:	CAT	2,271		17.4
END SESSION:	END	168		1.3
OVERALL TOTALS, ALL TERMINALS:		13,038		

Interesting to note in each of these stats split between Title, Author & Subject searching. Author does not dominate.

Keyword used very little.

Boolean heavy relative to small # of terminals (staff use only) at which it is available.

← Going thru index lists is a common occupation of catalog searchers.

← Staff, of course, bypass this command altogether & use command chaining instead of menus.

NEW YORK UNIVERSITY

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When you're in the Library and need to use a catalog, are you more likely to use . . .?

	Total Sample	Total Students	Total Ugrads	Undergrads Male	Undergrads Female
A card catalog	137	115	99	53	46
	23%	28%	27%	23%	35%
Computerized catalog	203	185	165	113	52
	41%	45%	45%	48%	39%
Either - Doesn't really matter	73	58	50	32	18
	15%	14%	14%	14%	14%
I don't use catalogs	26	21	20	12	8
	5%	5%	5%	5%	6%
Don't know	51	37	34	25	9
	10%	9%	9%	11%	7%

Public Catalog Use Statistics

Count of searches by type of search

	December (16 days)		February (21 days)	
Author	8,231	32%	13,217	30%
Subjectlc	8,963	35%	16,242	37%
Subjectm	589	2%	1,230	3%
Title	7,978	31%	13,351	30%

Count of searches by number of hits

	December (16 days)		February (21 days)	
0	9,287	36%	15,987	36%
1	2,824	11%	4,562	10%
2-17	7,130	28%	11,920	27%
18-34	1,740	7%	2,974	7%
35-51	883	3%	1,512	3%
52-68	548	2%	903	2%
69-998	2,957	11%	5,409	12%
999-9999	392	2%	776	2%

	November	December	February
Help screens displayed	893	1,238	1,980
Intro screens displayed	2,058	2,349	4,566
Searches	18,168	25,761	44,043